

Good Morning/Afternoon, My name is \_\_\_\_\_. I work for the Environmental Protection Agency and I am assisting with the investigation of the Title VI complaint filed on behalf of the North Carolina Environmental Justice Network, Rural Empowerment Association for Community Help (REACH), and the Waterkeeper Alliance, Inc.

Thank you for taking the time out of schedule to take time to speak with us again. This interview session is being recorded and I would ask if you could state if you agree to it being recorded. For the benefit of the recording could you please identify yourself by providing your full name. Thank you.

The purpose of this interview is to follow-up on the declaration that you submitted in support of the Title VI complaint.

**PRIVILEGED & CONFIDENTIAL**

TO: Marianne Engelman Lado, Alexis Andiman  
FR: Elizabeth Haddix, Brent Ducharme  
DT: November 10, 2016  
RE: 2382 – OCR Interview Planning –UPDATED

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**SUNDAY, NOVEMBER 13 – EVENING:** Meeting Place: Personal Privacy / Ex. 6 home. Point Person:  
Elizabeth Haddix

Declaration (if applicable)	Name and Address	Phone Number	City, County				Comments	Date and Time for Interview
Letter (9/8/16)	<div style="border: 1px dashed black; padding: 10px; min-height: 100px;">Personal Privacy / Ex. 6</div> & Neighbors?							5-6:30pm

**MONDAY, NOVEMBER 14 – AM [TEAM A]:** Meeting Place: Sarecta Road. Point Person:

Declaration (if applicable)	Name and Address	Phone Number	City, County				Comments	Date and Time for Interview

PRIVILEGED & CONFIDENTIAL

Ex. 9 (4/12/16)	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6	Kenansville , Duplin					Monday. 11/14 9:00am (group preferred)
34  7 (4/12/16)	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6	Kenansville , Duplin					Monday, 11/14 9:00am Personal Privacy / Ex. 6 own interested in being interviewe d w/ Personal Privacy / Ex. 6
31 (9/3/16)	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6	Pink Hill, Duplin					?? Interview with Personal Privacy / Ex. 6

**PRIVILEGED & CONFIDENTIAL**

	(Hannah and Beaford are sisters)							
15  31 (9/3/16)	<div>Personal Privacy / Ex. 6</div> <div>Personal Privacy / Ex. 6</div> <div>Personal Privacy / Ex. 6</div> <div>Personal Privacy / Ex. 6</div>	<div>Personal Privacy / Ex. 6</div>	Pink Hill, Duplin					~9:30am

**MONDAY, NOVEMBER 14 – AM [TEAM B]:** Meeting Place: 

Personal Privacy / Ex. 6

 House; Point Person:

Declaration (if applicable)	Name and Address	Phone Number	City, County				Comments	Date and Time for Interview
9	<div>Personal Privacy / Ex. 6</div>	<div>Personal Privacy / Ex. 6</div>	Warsaw Duplin					between 9:00am and 12:00pm
22  23	<div>Personal Privacy / Ex. 6</div>	<div>Personal Privacy / Ex. 6</div>	Warsaw, Duplin				Note: Interested in interview at convenience store. <div>Personal Privacy / Ex. 6</div>	10:00 or 11:00am



**PRIVILEGED & CONFIDENTIAL**

	Personal Privacy / Ex. 6						room to meet in the back	
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**MONDAY, NOVEMBER 14 – AM [TEAM C]**

Meeting at REACH office. Tour with Personal Privacy / Ex. 6.  
Locations on tour may include:

Site	Location (appx.)	Description
<b>Veachs Rd.</b>	35.049050, -77.964133	Sprayer across the street <span>Personal Privacy / Ex. 6</span>
<b>Dead Box</b>	35.049200, -77.970161	Dead box near <span>Personal Privacy / Ex. 6</span>
<b>Dead Box</b>	35.020683, -77.957800	Dead box on Dr. Williams Rd.
<b>Dead Box</b>	34.98919, -77.95342	Dead box view from road .
<b>Lagoon View</b>	34.987222, -77.911056	Runoff from Lagoon View. [This site is adjacent to a 1,300+ hog CAFO owned by Murphy-Brown.]
<b>School</b>	34.95221, -77.95102	School within ½ mile of multiple lagoons and poultry facilities. [The nearest school appears to be Kenansville Elementary School, which is at 34.956276, -77.958734.]
<b>Gurman Powell Road</b>	34.962417, -77.903444	Multiple facilities can be seen from this road, which loops off of and back onto Highway 24. Facilities that can be seen include Ed Dail 5-12, which is permitted to house over 13,500 hogs.

**PRIVILEGED & CONFIDENTIAL**

<b>South Dobson Chapel Road</b>	34.902056, -77.931778	Multiple facilities can be seen here. Facilities include Carter & Songs Hog Farm (17,000+ hogs) and Melvin Bostic Farm (~10,000 hogs).
<b>Dobson Chapel Baptist Church</b>	1473 NC-50, Magnolia, NC 28453	Church affected by proximity to facilities.
<b>Runoff from Kilpatrick</b>	34.894000, -77.908861	Can see runoff from two Kilpatrick facilities here.

Site	Location (appx.)	Description
Personal Privacy / Ex. 6	34.731508, -77.959840	Sprayfield 0.4 miles from home

**MONDAY, NOVEMBER 14 – PM [TEAM A]**

Declaration (if applicable)	Name and Address	Phone Number	City, County			Comments	Date and Time for Interview
<b>Ex. 8 (4/12/16)</b>	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6	Warsaw, Duplin				<b>after 12:30pm</b>
<b>27</b>	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6	Magnolia, Duplin				Will let E know when off work, but even if working, Monday after 1:30 will be home

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<b>1</b> <b>(4/12/16)</b>	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6	Kenansville , Duplin				Not available but offered to have a phone interview after the site visit.
<b>Attach. 5 to</b> <b>Apr. 12, 2016</b> <b>supplemental</b> <b>comments</b>	Personal Privacy / Ex. 6						???
<b>N/A</b>	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6	Kenansville , Duplin				Confirmed for afternoon: call to confirm exact number

**SITES**

<b>Site</b>	<b>Location (appx.)</b>	<b>Description</b>
<b>Veachs Rd.</b>	35.049050, -77.964133	Sprayer across the street from Personal Privacy / Ex. 6
<b>Dead Box</b>	35.049200, -77.970161	Dead box near Personal Privacy / Ex. 6
<b>Dead Box</b>	35.020683, -77.957800	Dead box on Dr. Williams Rd.
<b>Dead Box</b>	34.98919, -77.95342	Dead box view from road.
<b>Lagoon View</b>	34.987222, -77.911056	Runoff from Lagoon View. [This site is adjacent to a 1,300+ hog CAFO owned by Murphy-Brown.]

**PRIVILEGED & CONFIDENTIAL**

<b>School</b>	34.95221, -77.95102	School within ½ mile of multiple lagoons and poultry facilities. [The nearest school appears to be Kenansville Elementary School, which is at 34.956276, -77.958734.]
<b>Gurman Powell Road</b>	34.962417, -77.903444	Multiple facilities can be seen from this road, which loops off of and back onto Highway 24. Facilities that can be seen include Ed Dail 5-12, which is permitted to house over 13,500 hogs.
<b>South Dobson Chapel Road</b>	34.902056, -77.931778	Multiple facilities can be seen here. Facilities include Carter & Songs Hog Farm (17,000+ hogs) and Melvin Bostic Farm (~10,000 hogs).
<b>Dobson Chapel Baptist Church</b>	1473 NC-50, Magnolia, NC 28453	Church affected by proximity to facilities.
<b>Runoff from Kilpatrick</b>	34.894000, -77.908861	Can see runoff from two Kilpatrick facilities here.

**MONDAY, NOVEMBER 14 – PM [TEAM B]**

**WITNESSES**

<b>Declaration (if applicable)</b>	<b>Name and Address</b>	<b>Phone Number</b>	<b>City, County</b>				<b>Comments</b>	<b>Date and Time for Interview</b>

**PRIVILEGED & CONFIDENTIAL**

N/A	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6						Available Monday 3-4 or Tuesday AM
Ex. 8 (9/3/14)	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6	Wallace , Duplin					??/
Ex. 17 10 11 12 13 29 (9/3/16)	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6	Wallace , Duplin					??

**SITES**

Site	Location (appx.)	Description
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**PRIVILEGED & CONFIDENTIAL**

Personal Privacy / Ex. 6	34.731508, -77.959840	Sprayfield 0.4 miles from home
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**MONDAY, NOVEMBER 14 – PM [TEAM C]: Elizabeth/Brent**

Declaration (if applicable)	Name and Address	Phone Number	City, County				Comments	Date and Time for Interview
Ex. 10 (4/12/16)	Personal Privacy / Ex. 6		Roseboro, Sampson					Available 11/14 or 11/15
35	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6	Clinton, Sampson					???
21	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6	Clinton, Sampson					???

**PRIVILEGED & CONFIDENTIAL**

26 (9/3/16)	Personal Privacy / Ex. 6							???
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**TUESDAY, NOVEMBER 15 – AM [TEAM A]:**

Declaration (if applicable)	Name and Address	Phone Number	City, County				Comments	Date and Time for Interview
N/A	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6						9:00am

**TUESDAY, NOVEMBER 15 – AM [TEAM B]:**

Declaration (if applicable)	Name and Address	Phone Number	City, County				Comments	Date and Time for Interview
N/A	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6						??

PRIVILEGED & CONFIDENTIAL

	Personal Privacy / Ex. 6							
N/A	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6						
N/A	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6						
N/A	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6						
N/A	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6						
N/A	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6						
N/A	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6					Tuesday AM

TUESDAY, NOVEMBER 15 – AM [TEAM C]



**PRIVILEGED & CONFIDENTIAL**

Declaration (if applicable)	Name and Address	Phone Number	City, County				Comments	Date and Time for Interview
36 (9/3/16)	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6	Kenansville, Duplin					Tuesday, 11/15 anytime.
3 (4/12/16)	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6	Turkey, Sampson				Interview with Personal Privacy / Ex. 6	??
6 (4/12)	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6	Turkey Sampson				Personal Privacy / Ex. 6	11:00 am

**TUESDAY, NOVEMBER 15 – PM [TEAM A]:**

Declaration (if applicable)	Name and Address	Phone Number	City, County				Comments	Date and Time for Interview
	Personal Privacy / Ex. 6		Personal Privacy / Ex. 6					Tuesday, 11/15 afternoon

**PRIVILEGED & CONFIDENTIAL**

								Personal Privacy / Ex. 6
	Personal Privacy / Ex. 6		Snow Hill, Sampson	Elizabeth/Brent	11/09			
	Personal Privacy / Ex. 6		Snow Hill, Sampson	Elizabeth/Brent	11/09			
	Personal Privacy / Ex. 6		Snow Hill, Sampson	Elizabeth/Brent Elizabeth/Brent	11/09			

**TUESDAY, NOVEMBER 15 – PM [TEAM B]**

Declaration (if applicable)	Name and Address	Phone Number	City, County				Comments	Date and Time for Interview
<b>20</b> <b>(9/3/16)</b>	Personal Privacy / Ex. 6	910 382- 3647	Warsaw, Duplin					<b>1:00- 2:00pm:</b>
<b>18</b>	Personal Privacy / Ex. 6	910 471- 2094	Rocky Point, Pender					<b>3:30 am</b> <b>At church</b> Personal Privacy / Ex. 6

**PRIVILEGED & CONFIDENTIAL**

	Personal Privacy / Ex. 6							
25 (9/3/16)	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6						Personal Privacy / Ex. 6

**TUESDAY, NOVEMBER 15 – PM [Team C] & STILL TO BE SCHEDULED**

Declaration (if applicable)	Name and Address	Phone Number	City, County				Comments	Date and Time for Interview
	Personal Privacy / Ex. 6						Can interview at REACH	Tuesday afternoon
	Personal Privacy / Ex. 6						Can interview at REACH	Tuesday afternoon
	Personal Privacy / Ex. 6		Duplin County				Personal Privacy / Ex. 6	??

PRIVILEGED & CONFIDENTIAL

	Personal Privacy / Ex. 6		Duplin County				Personal Privacy / Ex. 6	??
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**CONFIDENTIAL**

TO: OCR/OGC c/o Mary O'Lone  
FR: Marianne Engelman Lado, Alexis Andiman, Elizabeth Haddix, Brent Ducharme  
DT: November 12, 2016  
RE: OCR Interview Planning –UPDATED

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**SUNDAY, NOVEMBER 13 – EVENING: Elizabeth/EPA**

Declaration (if applicable)	Name and Address	Phone Number	City, County				Comments	Date and Time for Interview
Letter (9/8/16)	<div>Personal Privacy / Ex. 6</div> & Neighbors						One set of neighbors has agreed to meet with OCR Sunday evening.	5-6:30pm

**CONFIDENTIAL**

**MONDAY, NOVEMBER 14 – AM [TEAM A]:** Meeting place: Personal Privacy / Ex. 6  
Elizabeth/Naeema

**WITNESSES**

Declaration (if applicable)	Name and Address	Phone Number	City, County			Comments	Date and Time for Interview
Ex. 9 (4/12/16)	<span style="border: 1px dashed black; display: block; height: 100px; width: 100%;"></span>	<span style="border: 1px dashed black; display: block; height: 100px; width: 100%;"></span>	Kenansville, Duplin				Monday, 11/14 9:00am (group preferred)
34  7 (4/12/16)			Kenansville, Duplin				Monday, 11/14 9:00am
31 (9/3/16)			Pink Hill, Duplin				? Interview with <span style="border: 1px dashed black; display: block; height: 20px; width: 100%;"></span>

**CONFIDENTIAL**

							Personal Privacy / Ex. 6
15  31 (9/3/16)	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6	Pink Hill, Duplin				~9:30am

**MONDAY, NOVEMBER 14 – AM [TEAM B]:** Meeting place, Alexis/Elsie

**Personal Privacy / Ex. 6**

**WITNESSES**

<b>Declaration (if applicable)</b>	<b>Name and Address</b>	<b>Phone Number</b>	<b>City, County</b>			<b>Comments</b>	<b>Date and Time for Interview</b>
9	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6	Warsaw Duplin				9:00am

**CONFIDENTIAL**

22		Personal Privacy / Ex. 6	Warsaw, Duplin				10:00 or 11:00am
23	Personal Privacy / Ex. 6						

**MONDAY, NOVEMBER 14 – AM [TEAM C]:** Meeting place: REACH, Marianne Personal Privacy / Ex. 6

**POTENTIAL SITES FOR TOUR** Personal Privacy / Ex. 6

Site	Location (appx.)	Description
<b>Sprayfield in Richlands</b>	34.8766455, -77.569470	Gregory Forks Rd. in Richlands, Onslow County. Sprayfield is in close proximity to residential area.
<b>Sprayer next to Rt. 41</b>	35.066139, -77.414611	Sprayer near Browns 5 & 6, next to the road.
<b>Runoff on Currin Howard Road</b>	35.040389, -77.628278	Runoff from JC Howard. Sprayers and drainage visible.
<b>New River</b>	34.87645, -77.569470	Three lagoons of Howard Farm within 0.12 miles of New River.
<b>Veachs Rd.</b>	35.049050, -77.964133	Sprayer across the street <span>Personal Privacy / Ex. 6</span>



**CONFIDENTIAL**

<b>Dead Box</b>	35.049200, -77.970161	Dead box near <span style="border: 1px dashed black; padding: 2px;">Personal Privacy / Ex. 6</span>
<b>Dead Box</b>	35.020683, -77.957800	Dead box on Dr. Williams Rd.
<b>Dead Box</b>	34.98919, -77.95342	Dead box view from road.
<b>Sarecta Road</b>	34.987222, -77.911056	This site is adjacent to a 1,300+ hog CAFO owned by Murphy-Brown. Turn south, not north, onto Bob Quinn Lane. It is not marked, but it is public. Drive back to the dirt road, lagoon will be on the left.
<b>School</b>	34.95221, -77.95102	School within ½ mile of multiple lagoons and poultry facilities. [The nearest school appears to be Kenansville Elementary School, which is at 34.956276, -77.958734.]
<b>Gurman Powell Road</b>	34.962417, -77.903444	Multiple facilities can be seen from this road, which loops off of and back onto Highway 24. Facilities that can be seen include Ed Dail 5-12, which is permitted to house over 13,500 hogs.
<b>South Dobson Chapel Road</b>	34.902056, -77.931778	Multiple facilities can be seen here. Facilities include Carter & Songs Hog Farm (17,000+ hogs) and Melvin Bostic Farm (~10,000 hogs).
<b>Dobson Chapel Baptist Church</b>	1473 NC-50, Magnolia, NC 28453	Church affected by proximity to facilities.
<b>Farrior School Road</b>	34.962417, -77.903444	Can see a lagoon and into a barn from the road.
<b>Runoff from Kilpatrick</b>	34.894000, -77.908861	Can see runoff from two Kilpatrick facilities here.
<b>Creek Near South Dobson Chapel Road</b>	34.902056, -77.931778	32 CAFOs drain into this creek over a length of approximately 3.2 miles.

**CONFIDENTIAL**

<b>Stocking Head Creek</b>	34.897853, -77.936319	30 facilities on or near this waterway.
<b>Northeast Cape Fear River</b>	34.979361, -77.86078	Accessible on Sarecta Road. Lagoon is within 0.10 miles of river.
Personal Privacy / Ex. 6	34.731508, -77.959840	Sprayfield 0.4 miles from home

**MONDAY, NOVEMBER 14 – PM [TEAM A]:** Meeting place 446 Veach's Mill Road, Alexis/Devon

**WITNESSES**

<b>Declaration (if applicable)</b>	<b>Name and Address</b>	<b>Phone Number</b>	<b>City, County</b>			<b>Comments</b>	<b>Date and Time for Interview</b>
<b>Ex. 8 (4/12/16)</b>	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6	Warsaw, Duplin				<b>after 12:30pm</b>
<b>27</b>			Magnolia, Duplin				Will let E know when off work, but even if working Monday after 1:30 will be home
<b>N/A</b>			Kenansville, Duplin				Confirmed for afternoon: call to confirm exact number

**CONFIDENTIAL**

**POTENTIAL SITES**

<b>Site</b>	<b>Location (appx.)</b>	<b>Description</b>
<b>Veachs Rd.</b>	35.049050, -77.964133	Sprayer across the street from <span style="border: 1px dashed black; padding: 2px;">Personal Privacy / Ex. 6</span>
<b>Dead Box</b>	35.049200, -77.970161	Dead box near <span style="border: 1px dashed black; padding: 2px;">Personal Privacy / Ex. 6</span>
<b>Dead Box</b>	35.020683, -77.957800	Dead box on Dr. Williams Rd.
<b>Dead Box</b>	34.98919, -77.95342	Dead box view from road.
<b>Sarecta Road</b>	34.987222, -77.911056	This site is adjacent to a 1,300+ hog CAFO owned by Murphy-Brown. Turn south, not north, onto Bob Quinn Lane. It is not marked, but it is public. Drive back to the dirt road, lagoon will be on the left.
<b>School</b>	34.95221, -77.95102	School within ½ mile of multiple lagoons and poultry facilities. [The nearest school appears to be Kenansville Elementary School, which is at 34.956276, -77.958734.]
<b>Gurman Powell Road</b>	34.962417, -77.903444	Multiple facilities can be seen from this road, which loops off of and back onto Highway 24. Facilities that can be seen include Ed Dail 5-12, which is permitted to house over 13,500 hogs.
<b>South Dobson Chapel Road</b>	34.902056, -77.931778	Multiple facilities can be seen here. Facilities include Carter & Songs Hog Farm (17,000+ hogs) and Melvin Bostic Farm (~10,000 hogs).
<b>Dobson Chapel Baptist Church</b>	1473 NC-50, Magnolia, NC 28453	Church affected by proximity to facilities.

**CONFIDENTIAL**

<b>Farrior School Road</b>	34.962417, -77.903444	Can see a lagoon and into a barn from the road.
<b>Runoff from Kilpatrick</b>	34.894000, -77.908861	Can see runoff from two Kilpatrick facilities here.
<b>Creek Near South Dobson Chapel Road</b>	34.902056, -77.931778	32 CAFOs drain into this creek over a length of approximately 3.2 miles.
<b>Stocking Head Creek</b>	34.897853, -77.936319	30 facilities on or near this waterway.
<b>Northeast Cape Fear River</b>	34.979361, -77.86078	Accessible on Sarecta Road. Lagoon is within 0.10 miles of river.

**CONFIDENTIAL**

**MONDAY, NOVEMBER 14 – PM [TEAM B]:** Meeting place, **Personal Privacy / Ex. 6**  
 Marianne **Personal Privacy / Ex. 6**

**WITNESSES**

Declaration (If applicable)	Name and Address	Phone Number	City, County			Comments	Date and Time for Interview
N/A	<b>Personal Privacy / Ex. 6</b>	<b>Personal Privacy / Ex. 6</b>					Available Monday 3-4 or Tuesday AM
Ex. 8 (9/3/14)	<b>Personal Privacy / Ex. 6</b>	<b>Personal Privacy / Ex. 6</b>	Wallace, Duplin				Willing to join group at 4:00pm at <b>Personal Privacy / Ex. 6</b> But he lives 1 mile away.
Ex. 17 10 11 12 13 29 (9/3/16)							4:00 pm at <b>Personal Privacy / Ex. 6</b> house. <b>Personal Privacy / Ex. 6</b>

**CONFIDENTIAL**

	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6						
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**SITES**

Site	Location (appx.)	Description
Personal Privacy / Ex. 6	34.731508, -77.959840	Sprayfield 0.4 miles from home

**MONDAY, NOVEMBER 14 – PM [TEAM C]:** Meeting place Elizabeth/ Personal Privacy / Ex. 6

**WITNESSES**

Declaration (if applicable)	Name and Address	Phone Number	City, County			Comments	Date and Time for Interview
Ex. 10 (4/12/16)	Personal Privacy / Ex. 6		Roseboro, Sampson				Available 11/14 or 11/15

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35	Personal Privacy / Ex. 6		Clinton, Sampson				???	Tentative
21	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6	Clinton, Sampson				???	Tentative
	Personal Privacy / Ex. 6		Snow Hill, Sampson				2:30	Group meeting.
	Personal Privacy / Ex. 6		Snow Hill, Sampson					

TUESDAY, NOVEMBER 15 – AM [TEAM A]: Meeting place

Personal Privacy / Ex. 6	Elizabeth	Personal Privacy / Ex. 6
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**CONFIDENTIAL**

**WITNESS**

Declaration (if applicable)	Name and Address	Phone Number	City, County			Comments	Date and Time for Interview
N/A	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6	Maxton				10:00? To be confirmed.

**TUESDAY, NOVEMBER 15 – AM [TEAM B]:** Meeting place ?, Alexis/

Personal Privacy / Ex. 6

**WITNESSES**

Declaration (if applicable)	Name and Address	Phone Number	City, County			Comments	Date and Time for Interview
N/A	Personal Privacy / Ex. 6		Garysburg			First interview of the day. Confirm time and address.	10 am
N/A							Part of group



**CONFIDENTIAL**

							interview 11 am
N/A	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6					Part of group interview
N/A							Part of group interview
N/A			Northhamp ton County				Tuesday AM?  Tentative

**CONFIDENTIAL**

**TUESDAY, NOVEMBER 15 – AM [TEAM C], Meeting at REACH and then Serecta Road,**  
 Marianne Personal Privacy / Ex. 6

**WITNESSES**

Declaration (if applicable)	Name and Address	Phone Number	City, County			Comments	Date and Time for Interview
	<div style="border: 1px dashed black; padding: 10px; min-height: 200px;">Personal Privacy / Ex. 6</div>						9:30 am
36 (9/3/16)			Kenansville, Duplin				Tuesday, 11/15 anytime.
3 (4/12/16)			Turkey, Sampson				<div style="border: 1px dashed black; padding: 2px;">Personal Privacy / Ex. 6</div>
6 (4/12)			Turkey Sampson				11:00 am

**CONFIDENTIAL**

**TUESDAY, NOVEMBER 15 – PM [TEAM A]:** Meeting place, Personal Privacy / Ex. 6 Alexis or Brent (?) Personal Privacy / Ex. 6

**WITNESSES**

Declaration (if applicable)	Name and Address	Phone Number	City, County			Comments	Date and Time for Interview
20 (9/3/16)			Warsaw, Duplin				1:00- 2:00pm:
18	Personal Privacy / Ex. 6		Rocky Point, Pender				3:30pm

**CONFIDENTIAL**

25 (9/3/16)	Personal Privacy / Ex. 6					3:30pm
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**TUESDAY, NOVEMBER 15 – PM [TEAM B]:** Meeting place, Marianne/

Personal Privacy / Ex. 6

**Personal Privacy / Ex. 6**

**WITNESSES**

Declaration (if applicable)	Name and Address	Phone Number	City, County			Interview Date	Comments	Date and Time for Interview
	Personal Privacy / Ex. 6		Warsaw Duplin County					2 pm
								REACH office
								REACH office

Nov 11/14

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Site Visit Schedule  
Updated as of 11/13/16

SUNDAY, NOVEMBER 13 – EVENING: Elizabeth/EPA

Declaration (if applicable)	Name and Address	Phone Number	City, County	Comments	Date and Time for Interview
Letter (9/8/16)	Personal Privacy / Ex. 6		Personal Privacy / Ex. 6	One set of neighbors has agreed to meet with OCR Sunday evening still working on 2 more, will know by 11/12	4-6:30pm

**PRIVILEGED & CONFIDENTIAL**

**MONDAY, NOVEMBER 14 – AM [TEAM A]:** Meeting place: Elizabeth

Personal Privacy / Ex. 6

Personal Privacy / Ex. 6

**WITNESSES**

Declaration (if applicable)	Name and Address	Phone Number	City, County	Date and Time for Interview
Ex. 9 (4/12/16)	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6	Kenansville, Duplin	Monday, 11/14 9:00am: group meeting at Personal Privacy / Ex. 6
34  7 (4/12/16)	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6	Kenansville, Duplin	In 9:00 am group  Personal Privacy / Ex. 6 still tentative.
31 (9/3/16)	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6	Pink Hill, Duplin	In group meeting at approx. 10 am, with Personal Privacy / Ex. 6 Personal Privacy / Ex. 6

**PRIVILEGED & CONFIDENTIAL**

<b>15</b>  <b>31</b> <b>(9/3/16)</b>	<div style="border: 1px dashed black; width: 80px; height: 150px; margin: 5px; text-align: center; vertical-align: middle;"> Personal Privacy / Ex. 6 </div>	<div style="border: 1px dashed black; width: 60px; height: 50px; margin: 5px; text-align: center; vertical-align: middle;"> Personal Privacy / Ex. 6 </div>	Pink Hill, Duplin	Approx. 10:00 am
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**MONDAY, NOVEMBER 14 – AM [TEAM B]:** Meeting place, 1869 West Wards Bridge Road, Alexis/Elsie

**WITNESSES**

<b>Declaration (if applicable)</b>	<b>Name and Address</b>	<b>Phone Number</b>	<b>City, County</b>	<b>Date and Time for Interview</b>
<b>9</b>	<div style="border: 1px dashed black; width: 130px; height: 75px; margin: 5px; text-align: center; vertical-align: middle;"> Personal Privacy / Ex. 6 </div>	<div style="border: 1px dashed black; width: 90px; height: 30px; margin: 5px; text-align: center; vertical-align: middle;"> Personal Privacy / Ex. 6 </div>	Warsaw Duplin	<b>9:00am</b>
<b>Ex. 8 (9/3/14)</b>	<div style="border: 1px dashed black; width: 140px; height: 55px; margin: 5px; text-align: center; vertical-align: middle;"> Personal Privacy / Ex. 6 </div>	<div style="border: 1px dashed black; width: 90px; height: 30px; margin: 5px; text-align: center; vertical-align: middle;"> Personal Privacy / Ex. 6 </div>	Wallace, Duplin	<b>Approx. 10:00 am</b>
<b>22</b>  <b>23</b>	<div style="border: 1px dashed black; width: 150px; height: 100px; margin: 5px; text-align: center; vertical-align: middle;"> Personal Privacy / Ex. 6 </div>	<div style="border: 1px dashed black; width: 100px; height: 30px; margin: 5px; text-align: center; vertical-align: middle;"> Personal Privacy / Ex. 6 </div>	Warsaw, Duplin	<b>Approx. 11:00 or 11:30am</b>

**PRIVILEGED & CONFIDENTIAL**

**MONDAY, NOVEMBER 14 – AM [TEAM C]:** Meeting place: REACH, Marianne/ Personal Privacy / Ex. 6

**POTENTIAL SITES FOR TOUR WITH** Personal Privacy / Ex. 6

Site	Location (appx.)	Description
<b>Sprayfield in Richlands</b>	34.8766455, -77.569470	Gregory Forks Rd. in Richlands, Onslow County. Sprayfield is in close proximity to residential area.
<b>Sprayer next to Rt. 41</b>	35.066139, -77.414611	Sprayer near Browns 5 & 6, next to the road.
<b>Runoff on Currin Howard Road</b>	35.040389, -77.628278	Runoff from JC Howard. Sprayers and drainage visible.
<b>New River</b>	34.87645, -77.569470	Three lagoons of Howard Farm within 0.12 miles of New River.
<b>Veachs Rd.</b>	35.049050, -77.964133	Sprayer across the street from <span style="border: 1px dashed black; padding: 2px;">Personal Privacy / Ex. 6</span>
<b>Dead Box</b>	35.049200, -77.970161	Dead box near <span style="border: 1px dashed black; padding: 2px;">Personal Privacy / Ex. 6</span>
<b>Dead Box</b>	35.020683, -77.957800	Dead box on Dr. Williams Rd.
<b>Dead Box</b>	34.98919, -77.95342	Dead box view from road.
<b>Sarecta Road</b>	34.987222, -77.911056	This site is adjacent to a 1,300+ hog CAFO owned by Murphy-Brown. Turn south, not north, onto Bob Quinn Lane. It is not marked, but it is public. Drive back to the dirt road, lagoon will be on the left.



**PRIVILEGED & CONFIDENTIAL**

<b>School</b>	34.95221, -77.95102	School within ½ mile of multiple lagoons and poultry facilities. [The nearest school appears to be Kenansville Elementary School, which is at 34.956276, -77.958734.]
<b>Gurman Powell Road</b>	34.962417, -77.903444	Multiple facilities can be seen from this road, which loops off of and back onto Highway 24. Facilities that can be seen include Ed Dail 5-12, which is permitted to house over 13,500 hogs.
<b>South Dobson Chapel Road</b>	34.902056, -77.931778	Multiple facilities can be seen here. Facilities include Carter & Songs Hog Farm (17,000+ hogs) and Melvin Bostic Farm (~10,000 hogs).
<b>Dobson Chapel Baptist Church</b>	1473 NC-50, Magnolia, NC 28453	Church affected by proximity to facilities.
<b>Farrior School Road</b>	34.962417, -77.903444	Can see a lagoon and into a barn from the road.
<b>Runoff from Kilpatrick</b>	34.894000, -77.908861	Can see runoff from two Kilpatrick facilities here.
<b>Creek Near South Dobson Chapel Road</b>	34.902056, -77.931778	32 CAFOs drain into this creek over a length of approximately 3.2 miles.
<b>Stocking Head Creek</b>	34.897853, -77.936319	30 facilities on or near this waterway.
<b>Northeast Cape Fear River</b>	34.979361, -77.86078	Accessible on Sarecta Road. Lagoon is within 0.10 miles of river.
<b>Personal Privacy / Ex. 6</b>	34.731508, -77.959840	Sprayfield 0.4 miles from home

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**MONDAY, NOVEMBER 14 – PM [TEAM A]:** Meeting place

Alexis

Personal Privacy / Ex. 6

Personal Privacy / Ex. 6

**WITNESSES**

Declaration (if applicable)	Name and Address	Phone Number	City, County	Comments	Date and Time for Interview
Ex. 8 (4/12/16)	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6	Warsaw, Duplin	Personal Privacy / Ex. 6	After 12:30pm
N/A	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6	Kenansville, Duplin		

**PRIVILEGED & CONFIDENTIAL**

**POTENTIAL SITES**

<b>Site</b>	<b>Location (appx.)</b>	<b>Description</b>
<b>Veachs Rd.</b>	35.049050, -77.964133	Sprayer across the street from <b>Personal Privacy / Ex. 6</b>
<b>Dead Box</b>	35.049200, -77.970161	Dead box near <b>Personal Privacy / Ex. 6</b>
<b>Dead Box</b>	35.020683, -77.957800	Dead box on Dr. Williams Rd.
<b>Dead Box</b>	34.98919, -77.95342	Dead box view from road.
<b>Sarecta Road</b>	34.987222, -77.911056	This site is adjacent to a 1,300+ hog CAFO owned by Murphy-Brown. Turn south, not north, onto Bob Quinn Lane. It is not marked, but it is public. Drive back to the dirt road, lagoon will be on the left.
<b>School</b>	34.95221, -77.95102	School within ½ mile of multiple lagoons and poultry facilities. [The nearest school appears to be Kenansville Elementary School, which is at 34.956276, -77.958734.]
<b>Gurman Powell Road</b>	34.962417, -77.903444	Multiple facilities can be seen from this road, which loops off of and back onto Highway 24. Facilities that can be seen include Ed Dail 5-12, which is permitted to house over 13,500 hogs.
<b>South Dobson Chapel Road</b>	34.902056, -77.931778	Multiple facilities can be seen here. Facilities include Carter & Songs Hog Farm (17,000+ hogs) and Melvin Bostic Farm (~10,000 hogs).
<b>Dobson Chapel Baptist Church</b>	1473 NC-50, Magnolia, NC 28453	Church affected by proximity to facilities.
<b>Farrior School Road</b>	34.962417, -77.903444	Can see a lagoon and into a barn from the road.

**PRIVILEGED & CONFIDENTIAL**

<b>Runoff from Kilpatrick</b>	34.894000, -77.908861	Can see runoff from two Kilpatrick facilities here.
<b>Creek Near South Dobson Chapel Road</b>	34.902056, -77.931778	32 CAFOs drain into this creek over a length of approximately 3.2 miles.
<b>Stocking Head Creek</b>	34.897853, -77.936319	30 facilities on or near this waterway.
<b>Northeast Cape Fear River</b>	34.979361, -77.86078	Accessible on Sarecta Road. Lagoon is within 0.10 miles of river.

**MONDAY, NOVEMBER 14 – PM [TEAM B]:** Meeting place, Marianne Personal Privacy / Ex. 6 **Personal Privacy / Ex. 6**,

**WITNESSES**

<b>Declaration (if applicable)</b>	<b>Name and Address</b>	<b>Phone Number</b>	<b>City, County</b>	<b>Date and Time for Interview</b>
<b>N/A</b>	<span style="border: 1px dashed black; padding: 10px; display: block; text-align: center;"><b>Personal Privacy / Ex. 6</b></span>	<span style="border: 1px dashed black; padding: 10px; display: block; text-align: center;"><b>Personal Privacy / Ex. 6</b></span>	Wallace, Duplin	<b>Monday 3-4</b>

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17	<div style="border: 1px dashed black; height: 200px; width: 150px; margin: 10px auto;"> <div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%);"> Personal Privacy / Ex. 6 </div> </div>	<div style="border: 1px dashed black; height: 200px; width: 150px; margin: 10px auto;"> <div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%);"> Personal Privacy / Ex. 6 </div> </div>	Wallace, Duplin	4:00 pm at	Personal Privacy / Ex. 6
10				Personal Privacy / Ex. 6	
11					
12					
13					
29 (9/3/16)					

**SITES**

Site	Location (appx.)	Description
Personal Privacy / Ex. 6	34.731508, -77.959840	Sprayfield 0.4 miles from home

**MONDAY, NOVEMBER 14 – PM [TEAM C]:** Meeting place Elizabeth, Personal Privacy / Ex. 6 Personal Privacy / Ex. 6

**WITNESSES**

Declaration (if applicable)	Name and Address	Phone Number	City, County	Comments	Date and Time for Interview

**PRIVILEGED & CONFIDENTIAL**

<b>Ex. 10</b>	<b>(4/12/16)</b>	<div data-bbox="779 194 936 396" style="border: 1px dashed black; padding: 5px;"> Personal Privacy / Ex. 6 </div>		Roseboro, Sampson	Elizabeth will confirm address and order of interviews.	
	<div data-bbox="779 455 915 791" style="border: 1px dashed black; padding: 5px;"> Personal Privacy / Ex. 6 </div>	<div data-bbox="947 446 1083 564" style="border: 1px dashed black; padding: 5px;"> Personal Privacy / Ex. 6 </div>	Snow Hill, Sampson		<b>2:30</b> Group meeting.	
	<div data-bbox="779 900 894 1387" style="border: 1px dashed black; padding: 5px;"> Personal Privacy / Ex. 6 </div>		Meet at the church  Snow Hill, Sampson		<b>Approx. noon?</b>	

**PRIVILEGED & CONFIDENTIAL**

**TUESDAY, NOVEMBER 15 – AM [TEAM A]:** Meeting place **Personal Privacy / Ex. 6**, Elizabeth **Personal Privacy / Ex. 6**

WITNESS

Declaration (if applicable)	Name and Address	Phone Number	City, County	Comments	Date and Time for Interview
N/A	<b>Personal Privacy / Ex. 6</b>	<b>Personal Privacy / Ex. 6</b>			11:00am

**TUESDAY, NOVEMBER 15 – AM [TEAM B]:** Meeting place **Personal Privacy / Ex. 6**  
Garysburg, Alexis **Personal Privacy / Ex. 6**

WITNESSES

Declaration (if applicable)	Name and Address	Phone Number	City, County	Additional Steps?	Date and Time for Interview
N/A	<b>Personal Privacy / Ex. 6</b>		Garysburg		10 am

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<p>N/A</p> <p>11: AM</p>	<p>Personal Privacy / Ex. 6</p>	<p>Personal Privacy / Ex. 6</p>			<p>Part of group interview at <small>Personal Privacy / Ex. 6</small></p> <p><b>Personal Privacy / Ex. 6</b></p> <p>11 am</p>
<p>N/A</p>	<p><b>Personal Privacy / Ex. 6</b></p>				<p>Part of group interview</p>
<p>N/A</p>	<p>Personal Privacy / Ex. 6</p>				<p>Part of group interview</p>



**PRIVILEGED & CONFIDENTIAL**

**TUESDAY, NOVEMBER 15 – AM [TEAM C],** Meeting point at **Personal Privacy / Ex. 6**  
 Marianne **Personal Privacy / Ex. 6**

*my team*

WITNESSES

Declaration (if applicable)	Name and Address	Phone Number	City, County	Date and Time for Interview
	<b>Personal Privacy / Ex. 6</b>			9:30 am
36 (9/3/16)			Kenansville, Duplin	Tuesday, 11/15 anytime.
3 (4/12/16)			Turkey, Sampson	Group interview with <b>Personal Privacy / Ex. 6</b> <b>Personal Privacy / Ex. 6</b>
6 (4/12)			Turkey Sampson	11:00 am

**TUESDAY, NOVEMBER 15 – PM [TEAM A]:** Meeting place, **Personal Privacy / Ex. 6** Brent **Personal Privacy / Ex. 6**

WITNESSES

**PRIVILEGED & CONFIDENTIAL**

<b>Declaration (if applicable)</b>	<b>Name and Address</b>	<b>Phone Number</b>	<b>City, County</b>	<b>Date and Time for Interview</b>
<b>20 (9/3/16)</b>	<b>Personal Privacy / Ex. 6</b>	<b>Personal Privacy / Ex. 6</b>	Warsaw, Duplin	<b>1:00</b>
<b>27</b>			Magnolia, Duplin	<b>2:00</b>
<b>18</b>			Rocky Point, Pender	<b>3:30pm</b>

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25 (9/3/16)	Personal Privacy / Ex. 6	Personal Privacy / Ex. 6		3:30pm
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**TUESDAY, NOVEMBER 15 – PM [TEAM B]:** Meeting place, Marianne/

Personal Privacy / Ex. 6

**Personal Privacy / Ex. 6**

**WITNESSES**

Declaration (if applicable)	Name and Address	Phone Number	City, County	Date and Time for Interview
	Personal Privacy / Ex. 6		Warsaw Duplin County	2 pm
				REACH office
				REACH office

## On-Site Interviews

Time	Name & Address	County	H2O <sup>1</sup>	Concerns (All complain of overwhelming stench/odor)
<b>MONDAY</b>				
<b>TEAM A</b>				
9:00 am	Personal Privacy / Ex. 6	Duplin	P	<p>Exhibit 9 (4/2016) #CAFOs/Radius: 24/3 miles.</p> <p>See hog trucks every day. Guts &amp; liquid on the road. Used to have job emptying dead boxes. Dump them in open air hole in Rose Hill. Brown fog when spraying. No warning of spraying. Loss of use &amp; enjoyment: can't go outside, hang-dry clothing, can't open windows, daughter can't play outside. Flies and other bugs constantly around. Increased costs: A/C. Pays \$23-\$33/monthly County made him switch to county water but doesn't know why – maybe contamination from hog waste. Daughter can't go outside due to asthma being triggered by spraying. Eye/nasal allergies have worsened due to spraying. Still has to boil county water because it doesn't look or taste right. Can't afford a water cleaner and is upset that he has to pay for county water that still isn't clean enough. Poultry</p>
9:00am	Personal Privacy / Ex. 6	Duplin	W	<p>Exhibit #34 (9/2014). Map #14 #CAFOs/Radius: 5/1 miles</p> <p>Nearest hog farm is ½ mile away. Smells closer to spray fields. Hunting. Well water smells like hog waste. Tested 2009 found not safe to drink. Increased costs: Cost of bottled water.</p>

<sup>1</sup> Source of drinking water. W=well, P=public system.

Time	Name & Address	County	H2O <sup>1</sup>	Concerns (All complain of overwhelming stench/odor)
				Loss of use & enjoyment, rarely goes outside, close window.
9:00 am	Personal Privacy / Ex. 6	Duplin	?	<p>Exhibit # 7 (4/2016). Map #15 #CAFOs/Radius: 4/1 miles</p> <p>9 trucks a day go by house. Stench lingers. More trucks in morning &amp; covers schoolchildren at bus stop. Liquid from trucks permeates the ground &amp; smell comes back after rain. Noise. Spraying near house. No warning.</p> <p>Loss of use &amp; enjoyment (e.g., can't open windows, visit parent's cemetery, hang clothes out, take walks outside). Sometimes has to re-wash clothes due to strong smell.</p> <p>Breathing problems, asthma. Personal Privacy / Ex. 6 thinks hospital visits due to respiratory flare-ups are due to hog-waste pollution. High blood pressure.</p> <p>Daughters also had health problems including nose bleeds, sinus draining, anemia, etc. Missed work b/c of symptoms.</p> <p>Can't fish due to dead/deformed fish in local waters – Northeast Cape Fear River.</p>
9:00 am	Personal Privacy / Ex. 6	Duplin	?	No declaration
9:30	Personal Privacy / Ex. 6	Duplin	P	<p>Exhibit # 15. Map # 16 #CAFOs/Radius: 7/1 miles</p> <p>Hog farm 1/2mile. Poultry facility nearby. Odor for 3 days and flies. Loss of use &amp; enjoyment, closed windows, can't hang clothes, no activities outside.</p> <p>On municipal water, but it is brown.</p> <p>Sinus problems, ear problems, asthma problems.</p> <p>Believes will have trouble selling property.</p>
9:30	Personal Privacy / Ex. 6	Duplin	?	<p>Exhibit #33. Map #17 #CAFOs/Radius: 7/1 miles</p> <p>Loss of use &amp; enjoyment, close windows, no clothes outside, no cookouts, can't sit on our porch.</p>

<sup>1</sup> Lists others who have lived in the house & may have been affected by it.

Time	Name & Address	County	H20 <sup>1</sup>	Concerns (All complain of overwhelming stench/odor)
				Increased costs: A/C, cost of drying clothes. Nausea, sinuses, throat Decreased property values. Loss of use & enjoyment, Bad flies for 3 days after spray.
?	Personal Privacy / Ex. 6	Duplin	?	Exhibit # 31. Map #19 #CAFOs/Radius: 7/1 miles  Aerial photo looks like 7 CAFOS - at least 4 hogs farms. Breathing difficulties. Flies. Loss of use & enjoyment, no cookouts.
after 12:30	Personal Privacy / Ex. 6	Duplin	?	Exhibit 8 (4/2016). Map #1 #CAFOs/Radius: 5/1 miles; 30/3 miles  Waste gets on her car, lawn and home. 1 mile is 25,000 hogs & 8 lagoons. 2 miles is 80,000 hogs Spray in morning & at night. Dead box ¼ mile down road near cemetery. Dead boxes smell worse than spraying or confinement houses. 50 feet from spray fields including one across the street. (submitted CD with spraying OGC has not seen this CD). So many spray fields on this road that I smell the hog waste all the way to Warsaw. Medical conditions came after & believes are caused by hog farms: Heart problems, sinus & breathing issues, Sarcoidosis (bacteria in lungs) & eye bacteria. Loss of use & enjoyment (e.g., can't have cookouts, open windows, take walks or garden, hang-dry clothing) Buzzards Increased expenses: laundromat dryer.
After 1:30	Personal Privacy / Ex. 6	Duplin	W	Exhibit # 27. Map # 26 #CAFOs/Radius: 8/2 miles

<sup>3</sup> Brother lives next door can barely breathe due to asthma that developed 20 years ago. Ms. Outlaw was 85 at time of declaration.

Time	Name & Address	County	H2O <sup>1</sup>	Concerns (All complain of overwhelming stench/odor)
	Personal Privacy / Ex. 6			¼ mile of spray field. Spray every 2-3 weeks. Sludge disposal nearby. Trucks w/sludge, increasing noise, dust. Odor. Child has sinus issues. Uses well water but buys drinking & cooking water \$10-15 per week. Close windows REACH organizer.
Afternoon	Personal Privacy / Ex. 6	Duplin	?	No declaration
?	Personal Privacy / Ex. 6	Duplin	W	Exhibit # 5 (4/12). Map # 4. #CAFOs/Radius: 10/3 miles  2 hogs farms within ½ mile. Sees spraying. Can see dead boxes from his house. Seeing dead hogs & them being hauled away is disturbing & disgusting. Loss of use & enjoyment: Can't go outside, walk, gardening, can't breathe due to smell, can't breathe or open doors/windows. Trucks with dead hogs & live hogs driving by have horrible smell. Sound of squealing hogs horrible interrupts sleep. Trucks go by once a day. More when moving hogs in & out about every 3 or 4 months. Worries about well water contamination, but county refuses to hook his house up. Worries that the air from hog facilities is effecting his health (e.g., sneezing).
<b>TEAM B</b>				
Btwn 9:00 & 12:00	Personal Privacy / Ex. 6	Duplin	P	Exhibit #9. Map #6. #CAFOs/Radius: 11/2 miles  Loss of use & enjoyment, no cookouts, can't sit on our porch. No clothes outside—extra washing if do. Flies. Nausea, vomiting, runny nose, lung issues, Well water tested by state DWR in Wilmington, told can't drink or cook with it. Increased costs: Had to buy water until hooked up to county water. Had to pay for hook up. Afraid of county water in case there are breaks in the line where hog waste seeps in. Farmer tried to intimidate when found out about well test results. Said her 2 puppies were the cause of contamination.

Time	Name & Address	County	H2O <sup>1</sup>	Concerns (All complain of overwhelming stench/odor)
				Attends <b>Personal Privacy / Ex. 6</b> & smell limits use & enjoyment there too.
14	<b>Personal Privacy / Ex. 6</b>	Duplin	P	Exhibit #22. Map #24. #CAFOs/Radius: 10/2 miles  Moved to Warsaw <b>Personal Privacy / Ex. 6</b> Lives on major road. Odor & particulates from trucks a primary concern. White vinyl siding & can see hog residue on it. Spraying seems to be at night. Can't open house windows. Has severe bronchitis/pneumonia. Lowered house value and can't sell house.
14	<b>Personal Privacy / Ex. 6</b>	Duplin	P	Exhibit #23. Map #25. #CAFOs/Radius: 10/2 miles 10 hog trucks come through every day. Constant bad smell. Persistent cough developed since moving to house in 2009. Can't open the house b/c of odors & idling truck fumes. Loss of use & enjoyment, no clothes outside, can't grill outside or spend time outside. Increased costs: Use air filters, paid to connect to county water because of poor quality well water.
Monday 3-4 or Tuesday AM	<b>Personal Privacy / Ex. 6</b>	Duplin	?	
	<b>Personal Privacy / Ex. 6</b>	Duplin	P	Exhibit #8. Map #5. #CAFOs/Radius: 8/1.5 miles  Loss of use & enjoyment, no cookouts, can't sit on our porch & visit with neighbors, limits 4 wheeling, windows closed. Burn eyes & nose. Sinus infections & nasal problems. Well contaminated, now has town water. Cost for water. Used to fish & hunt for food. No longer fish in or hunt.

<sup>4</sup> "My cousins live directly in front of a hog farm. They live closer to the hog facility than I do. When they spray the waste goes directly on them."



Time	Name & Address	County	H2O <sup>1</sup>	Concerns (All complain of overwhelming stench/odor)
				Hog farm next to Charity Middle School & to Peter's Tabernacle <span>Personal Privacy / Ex. 6</span> . Flies.
	<span>Personal Privacy / Ex. 6</span>	Duplin	?	<p>Exhibit #17. Map #8. #CAFOs/Radius: 5/? Miles</p> <p>In past, waste blew onto the house and into the storm door and windows. Trees were planted as buffer, but waste still comes through &amp; trees are now dying. River Road is wet with waste from sprayer. Received verbal/physical threats from farmers. "The county lawyer" wrote letter threatening her with jail time for complaining to DENR or would have to pay hog farmer damages. People in the health field still continue to tell me to close windows when cooking. Loss of use &amp; enjoyment, wear a mask walking to car and can't freely exercise. Headaches, trouble breathing, and depression from spraying. Increased costs: Hooked up to county water &amp; has to pay for it. Can't hunt or fish.</p>
		Duplin	P	<p>Exhibit #10. Map #9. #CAFOs/Radius: 5/1 miles</p> <p>Can see waste on cars, windows, clothes, and house. Hits passing cars on highway. Flies. Loss of use &amp; enjoyment, no cookouts, can't sit on our porch. Relatives don't want to visit. Embarrassment. Nausea.</p>
		Duplin	P	<p>Exhibit #11. Map #10. #CAFOs/Radius: 5/1 miles</p> <p>Spray fields no more than 200-300 yds from home. Spray residue. Dead boxes. Flies. Buzzards Loss of use &amp; enjoyment, no cookouts, can't sit on our porch.</p>

5 Personal Privacy / Ex. 6 lives across from the spray field on River Road & across from her. Personal Privacy / Ex. 6

Personal Privacy / Ex. 6 lives nearby in trailer. Personal Privacy / Ex. 6

Personal Privacy / Ex. 6

Personal Privacy / Ex. 6

Time	Name & Address	County	H2O <sup>1</sup>	Concerns (All complain of overwhelming stench/odor)
				<p>Burn eyes and nose.</p> <p>Increased costs: Had to buy &amp; use clothes dryer. Switched to town water immediately when offered. Cost for county water.</p> <p>Believes will have difficulty selling property. Hogs all around Rainbow Baptist Church.</p> <p>Restaurants near hog farms smell. Clinton &amp; Lundy's pork processing plant smells.</p>
	Personal Privacy / Ex. 6	Duplin	P	<p>Exhibit #12. Map #11.</p> <p>#CAFOs/Radius: 5/1 miles</p> <p>Spray field next door. Feel mist. Odor really bad 2 or 3 days a week. Loss of use &amp; enjoyment, no cookouts, can't sit on our porch, have to exercise inside keep windows closed. Wakes them up in the night.</p> <p>Embarrassment. Burn eyes and nose.</p> <p>Increased costs: AC cost. Cost of town water is discolored &amp; has odor.</p> <p>Personal Privacy / Ex. 6 Rose Hill Elementary School – which has hog farm 10 min. away.</p>
	Personal Privacy / Ex. 6	Duplin	P	<p>Exhibit #13. Map #12.</p> <p>#CAFOs/Radius: 5/1 miles</p> <p>Child (15, now 17). Odor comes 5-10x per month.</p> <p>Loss of use &amp; enjoyment, no cookouts, can't play outside. Closest park is too far to drive. Hog farms affect where she wants to live when grows up. Wallace-Rose Hill High School.</p>
	Personal Privacy / Ex. 6	Duplin	?	<p>Exhibit #29. Map #13.</p> <p>#CAFOs/Radius: 5/1 miles</p> <p>Spray field next door &amp; sprays year round.</p> <p>Loss of use &amp; enjoyment, no cookouts, hold breath b/c on crutches when getting mail, going to deep freezer, no clothes outside, keep windows closed.</p> <p>Increased costs: AC cost. Bought dryer.</p> <p>Health issues, sinuses, bronchitis, breathing, sore throat.</p> <p>Major Murray Hog farm</p>



Time	Name & Address	County	H2O <sup>1</sup>	Concerns (All complain of overwhelming stench/odor)
TEAM C				
Meeting at REACH office. Tour with <span>Personal Privacy / Ex. 6</span> Locations on tour may include:				
Site	Location (appx.)	Description		
Veachs Rd.	35.049050, -77.964133	Sprayer across the street from <span>Personal Privacy / Ex. 6</span>		
Dead Box	35.049200, -77.970161	Dead box near <span>Personal Privacy / Ex. 6</span>		
Dead Box	35.020683, -77.957800	Dead box on Dr. Williams Rd.		
Dead Box	34.98919, -77.95342	Dead box view from road .		
Lagoon View	34.987222, -77.911056	Runoff from Lagoon View. [This site is adjacent to a 1,300+ hog CAFO owned by Murphy-Brown.]		
School	34.95221, -77.95102	School within ¼ mile of multiple lagoons and poultry facilities. [The nearest school appears to be Kenansville Elementary School, which is at 34.956276, -77.958734.]		
Gurman Powell Road	34.962417, -77.903444	Multiple facilities can be seen from this road, which loops off of and back onto Highway 24. Facilities that can be seen include Ed Dail 5-12, which is permitted to house over 13,500 hogs.		
South Dobson Chapel Road	34.902056, -77.931778	Multiple facilities can be seen here. Facilities include Carter & Songs Hog Farm (17,000+ hogs) and Melvin Bostic Farm (~10,000 hogs).		
Dobson Chapel Baptist Church	1473 NC-50, Magnolia, NC 28453	Church affected by proximity to facilities.		
Runoff from Kilpatrick	34.894000, -77.908861	Can see runoff from two Kilpatrick facilities here.		

Time	Name & Address	County	H2O <sup>1</sup>	Concerns (All complain of overwhelming stench/odor)
	Personal Privacy / Ex. 6	34.731508, -77.959840		Sprayfield 0.4 miles from home
afternoon	Personal Privacy / Ex. 6	Sampson	W	<p>Exhibit #10 (4/12). Map #3. #CAFOs/Radius: 2/0.5 miles</p> <p>Spray field couple hundred yards from house. 3 days a week smell powerful (summer) Dead box 2 miles from house 50 ft from road. Buzzards &amp; sight ghastly. Loss of use &amp; enjoyment (e.g., Grandchildren won't visit, can't sit outside, visitors ask to stay inside or leave, can't host or grill outside, avoids going home, wears mask to mow lawn). Sinus problems &amp; allergies year round. Believes cancer/sinus infections among local African Americans is unusually high due to spraying. Gag &amp; vomit if don't have mask. Increased costs: A/C running constantly, on bottled water about \$18/week or \$900/year, buying fish. Can't sell home due to smell. Young people leaving. Don't see people doing outside activities – washing car, basketball, sitting on porches Can't fish due to contamination &amp; has to buy fish from grocery store.</p>
		Sampson	?	<p>Exhibit #35. Map #26. #CAFOs/Radius: 14/3 miles<sup>8</sup></p> <p>Spray field &amp; hog house across the street &amp; in in woods behind house. Sprays 2-3 times per week. Spray field waste on car. Loss of use &amp; enjoyment, rarely lets child go outside.</p>
		Sampson	W	<p>Exhibit #21. Map #34. #CAFOs/Radius: 2/? miles</p>

<sup>8</sup> Map show 3 mile radius, but also farther.

Time	Name & Address	County	H2O <sup>1</sup>	Concerns (All complain of overwhelming stench/odor)
				<p>Has issues with well water. Use Pur water filter &amp; replaces the filter monthly. Well water would "fizzle." Ice has an "eggy" smell. Water often brown. Bad smell attracts bugs. Embarrassment.</p> <p><b>Personal Privacy / Ex. 6</b></p>
	Personal Privacy / Ex. 6	Sampson	?	<p>Exhibit #26. Map # 36. #CAFOs/Radius: 7/? Miles</p> <p>Talks about events at prior location of Union High School in Clinton. High School has moved. Spray on cars in parking lot. Everyone in school smelled horrible. Clothing would smell and would stink up cars, buses and classrooms. Humiliating. Notices that fishing ponds appear unhealthy. Fish have abrasions/infections and are unable to eat.</p> <p><b>Personal Privacy / Ex. 6</b></p> <p>Off Highway 701 there are 3 hog farms behind the trailer with undocumented Hispanic workers.</p>
offered phone interview after the site visit.	Personal Privacy / Ex. 6	Duplin	P	<p>Exhibit 1 (4/12). Map # 29. #CAFOs/Radius: 15/3 miles.</p> <p>Closest less than 1 mile. Spray gets on house and screens on the windows and doors. Dead boxes on Spicer Road has bugs and vultures. Lots of dead trucks. Particularly bad when it is windy. Comes through air ducts. Has trouble breathing outside. Diagnosed with asthma and has to take inhaler every 3-4 hours and oral medication made worse by the hog facilities. Doctors 2 times per month. High blood pressure. Loss of use &amp; enjoyment (e.g., can't go outside, open windows, have cookouts). Well-water is contaminated. County water is brown. Increased costs. A/C cost \$50-\$275/month. County water \$500 connection fee and \$30-\$45 per month, buys drinking water in 5-gallon drums. Can't fish anymore due to contaminated water and ill fish. Feels the hog facilities affects him mentally/physically.</p>

Time	Name & Address	County	H2O <sup>9</sup>	Concerns (All complain of overwhelming stench/odor)
TUESDAY				
TEAM A				
9:00		Robeson (bordering Scotland)	?	Personal Privacy / Ex. 6
afternoon		Greene	?	
		Greene	?	
		Greene	?	
		Greene	?	
TEAM B				
AM	Personal Privacy / Ex. 6	Northamp ton	?	
		Northamp ton	?	
		Northamp ton	?	

<sup>9</sup> Source of drinking water. W=well, P=public system.





	Personal Privacy / Ex. 6	Northamp ton	?	
		Northamp ton	?	
TEAM C				
		Duplin	P	<p>Exhibit #36, Map #28. Closest less than mile. Loss of use &amp; enjoyment (e.g., can't go outside, no clothes outside close windows, have cookouts, have to wear mask when hunting). County water hook up since Hurricane Floyd when county official hooked everyone up to city water. Have well water access, but county doesn't want us to drink it, but won't tell us why. Used to fish &amp; hunt for food. No longer fish in or hunt near Stocking Head Creek &amp; Cape Fear River b/c of contamination &amp; dead pigs in water &amp; fish with sores. Increased coughing &amp; high blood pressure. #CAFOs/Radius: 12/2 miles</p>
		Sampson	?	<p>Exhibit 3 (4/12), Map # 30. #CAFOs/Radius: 10/3</p> <p>Animal waste gets on car and home. Loss of use &amp; enjoyment: can't go outside, sit on porch, garden, no cookouts, caretaker for husband who has dementia &amp; can't take him outside. Mosquitos and bugs attracted to spray smell. Sinus headache, trouble breathing, itchy eyes. Prescribed breathing machine, asthma pump, runny nose, and eye drops to treat symptoms. Son has sinus problems and wears a respiratory mask to go outside &amp; cannot cut grass. Husband has diabetes, kidney disease, asthma, and dementia. Increased costs: prescriptions &amp; over the counter medications (\$100), asthma pump, breathing machine, &amp; inhalers, cannot afford some prescriptions or lawn service. Lawn service cheaper than doctor visit. Trucks – live &amp; dead animals. Poultry farms nearby. Can't afford to sell home because she can't afford to move.</p>

				<b>Personal Privacy / Ex. 6</b>	3 hog farms within 1 mile including hog farm right behind it.
11:00	<b>Personal Privacy / Ex. 6</b>	Sampson	?	Exhibit #6 (4/12). Map #31. #CAFOs/Radius: 5/1.5 Several spray fields near house. Loss of use & enjoyment (e.g., can't go outside, grandchildren can't play outside, open windows, no cookouts, can't go on porch, Gagging, burns eyes, causes itching sensation on skin. Increased costs: \$120 electricity bill would be lower if could open windows. Husband has COPD which costs \$16/month in medications and is made worse by the smell outside. Trucks day & night, smell & noise. Has to pull over when driving & hog truck pulls up. Can see haze in air, thinks from hog spray Poultry facilities	
1:00-2:00		Duplin	W	Exhibit # 20. Map # 23. #CAFOs/Radius: 8/1 miles  Wind/rain blow waste onto home. Can't go outside. Not hooked up to public water system, so buys bottled drinking water (\$5-10 a week). Can't fish.	
3:30	<b>Personal Privacy / Ex. 6</b>	Pender	?	Exhibit #18. Map #20. #CAFOs/Radius: 5/2 miles  Unescapable smell, gets in car. Coughing and draining of eyes. Interferes with church activities by forcing events inside. Congregants feel under pressure not to speak out. Tried to complain to Pender County Health Dept. during one bad episode of odor in the church in 2006. Calls not returned. Not tried again b/c under impression they could not or would not do anything.	<b>Deliberative Process / Ex. 5</b>

10

**Personal Privacy / Ex. 6**

Spray fields are right in front of house. Very strong odors.

				<b>Deliberative Process / Ex. 5</b>
	Personal Privacy / Ex. 6	Pender	?	Exhibit # 25. Map #22. #CAFOs/Radius: 9/3 miles Odors. Loss of use & enjoyment (e.g., can't go outside, use pool, open windows). Pays to have county water. Has allergies. Concern about # of local cancer patients. <b>Personal Privacy / Ex. 6</b> just around corner from her house. Says church is surrounded by hog farms. Can't open windows at church or have events outside.
	Personal Privacy / Ex. 6	Duplin	P	Exhibit # 16. Map #7 #CAFOs/Radius: 28/2 miles House is 1 mile from REACH office. 13 hogs farms in 2 mile radius of office & home. (Aerial photo shows 28 CAFOs in 2 mi. radius, likely poultry included). Has to eat food inside during REACH meetings because of the flies and bad smell. Can't fish anymore because the fish are starting to have sores on them. Increased costs: Believes the lagoons contaminate the well water and had to hook up to the county water system. Dead boxes - Overstuffed dead boxes attract birds. Works for REACH. Knows about people who have living near industrial hog farmers and dealing with hog-related MRSA. Has found that water bodies tested as having E.Coli, MRSA, and other harmful substances have not been added to the state's list of impaired water bodies.
	Personal Privacy / Ex. 6	Duplin	?	
		Duplin	?	
				Exhibit # 30. Map # 42. NC EJ Network organizer. No personal statements. Summary descriptions of effects she has seen or heard about.

<sup>11</sup> Exhibit 4 talks

Personal Privacy / Ex. 6

**Personal Privacy / Ex. 6**

Site	Location (appx.)	Description
Veachs Rd.	35.049050, -77.964133	Sprayer across the street from <b>Personal Privacy / Ex. 6</b>
Dead Box	35.049200, -77.970161	Dead box near <b>Personal Privacy / Ex. 6</b>
Dead Box	35.020683, -77.957800	Dead box on Dr. Williams Rd.
Dead Box	34.98919, -77.95342	Dead box view from road.
Lagoon View	34.987222, -77.911056	Runoff from Lagoon View. [This site is adjacent to a 1,300+ hog CAFO owned by Murphy-Brown.]
School	34.95221, -77.95102	School within ½ mile of multiple lagoons and poultry facilities. [The nearest school appears to be Kenansville Elementary School, which is at 34.956276, -77.958734.]
Gurman Powell Road	34.962417, -77.903444	Multiple facilities can be seen from this road, which loops off of and back onto Highway 24. Facilities that can be seen include Ed Dail 5-12, which is permitted to house over 13,500 hogs.
South Dobson Chapel Road	34.902056, -77.931778	Multiple facilities can be seen here. Facilities include Carter & Songs Hog Farm (17,000+ hogs) and Melvin Bostic Farm (~10,000 hogs).
Dobson Chapel Baptist Church	1473 NC-50, Magnolia, NC 28453	Church affected by proximity to facilities.
Runoff from Kilpatrick	34.894000, -77.908861	Can see runoff from two Kilpatrick facilities here.

CURRENTLY NOT IN INTERVIEW LIST				
11	Personal Privacy / Ex. 6	Lenoir		<p>Exhibit # 19. Map # 18. #CAFOs/Radius: 7/1 mile</p> <p>Closest hog farm less than ½ mile. Loss of use &amp; enjoyment. Can't hang-dry clothing, sit outside. Believes emphysema and use of oxygen tank due to spraying. Can't breathe well. Would like to switch to city water, but can't afford it. Home value decreased. Can't fish.</p>
		Duplin		<p>Exhibit # 5. Map # 32. Odors. Spray 3 times per week. Loss of use &amp; enjoyment, no outside entertaining, no walking. Mist in yard &amp; on clothes. Switched from well water. Decreased property values. Watery eyes.</p>
		Duplin		<p>Exhibit # 7. Map # 33. Cost for county water. Odors, flies. Loss of use &amp; enjoyment, no cookouts, can't sit on our porch. Windows closed. Use clothes dryer. Has to mow lawn twice a week b/c of nutrients from sprayers. Decreased property values. Can't sell or rent properties.</p>
		Sampson		<p>Exhibit # 24. Map # 35. #CAFOs/Radius: 3/1 mile</p> <p>Hog farms directly north &amp; south on Bass Lake Road. 3 w/in 1 mile &amp; 7 w/in 3 miles. High blood pressure, thyroid issues, heart conditions, uses oxygen machine. Nephew has regular sneezing/stuffy nose and allergies. Odor caused throat and mouth discomfort. Loss of use &amp; enjoyment (e.g., can't hang-dry clothing or sit outside, no cookouts, flies). Can't fish. Can't have outdoor events at church ( <b>Personal Privacy / Ex. 6</b> )</p>
		Duplin		<p>Exhibit # 28. Map # 37 #CAFOs/Radius: 7/1.5 miles</p> <p>Closest hog facility is 5-6 miles away (perhaps the 7 shown in photo are poultry). Odors. Spray. No longer fish. Stepping in waste outside facilities. Trucks – traffic &amp; odors. Loss of use &amp; enjoyment no walking. Dead boxes.</p>

		Duplin	<p>Exhibit #32. Map # 38. #CAFOs/Radius: 4/1.5 miles</p> <p>Many of impacts described are from when lived on Sarecta Rd. Odors from trucks, fluid from trucks, spray fields. Odors in clothes &amp; hair. Laundromat costs. Bad well water smelled like rotten eggs. Current issues are general to the area, not current home. Thinks adding to allergies.</p> <p>Odors at church <b>Personal Privacy / Ex. 6</b></p> <p>Brothers don't fish anymore green stuff grows in the water. Flies. Loss of use &amp; enjoyment, no cookouts. Source of drinking not clear.</p> <p>Drives to work from Beulaville, to Hallsville, thru Kenansville to Warsaw – hog farms all the way.</p>
	Personal Privacy / Ex. 6	Duplin	<p>Exhibit #2 (4/12). Map # 39. #CAFOs/Radius: 5/1 mile</p> <p>Spray burns eyes. Can't eat outside or hang-dry clothing due to smell. Due to odor has allergies, headaches, uses humidifier and other health issues. Grandchildren couldn't play outside and had runny eyes and sneezing. Had to pay \$500 plus monthly fees to connect to county water due to unsafe well-water. Lower property value.</p>
		Columbus	<p>Exhibit # 4 (4/12). Map # 40. #CAFOs/Radius: 2/2 miles</p> <p>Lower property value. On city water but doesn't trust the water quality; water doesn't smell or look clean. Skeptical of drinking water. Doesn't garden due to fear of contaminated groundwater.</p> <p>East Bladen High School – odor was embarrassment 2004-2007</p>
			<p>Exhibit # 6. Map # 41.</p> <p>Riverkeeper/Waterkeeper Alliance. I have participated in water monitoring on Stocking Head Creek, on a 3¼ mile stretch of water with more than 30 CAFOs.</p>

## On-Site Interviews

MONDAY TEAM A plus Elizabeth		Personal Privacy / Ex. 6	Meeting place:	Personal Privacy / Ex. 6
Time	Name & Address	County	H2O <sup>1</sup>	Concerns (All complain of overwhelming stench/odor)
9:00 am Group meeting	Personal Privacy / Ex. 6	Duplin	P	<p>Exhibit 9 (4/2016) #CAFOs/Radius: 24/3 miles.</p> <p>See hog trucks every day. Guts &amp; liquid on the road. Used to have job emptying dead boxes. Dump them in open air hole in Rose Hill. Brown fog when spraying. No warning of spraying. Loss of use &amp; enjoyment: can't go outside, hang-dry clothing, can't open windows, daughter can't play outside. Flies and other bugs constantly around. Increased costs: A/C. Pays \$23-\$33/monthly County made him switch to county water but doesn't know why – maybe contamination from hog waste. Daughter can't go outside due to asthma being triggered by spraying. Eye/nasal allergies have worsened due to spraying. Still has to boil county water because it doesn't look or taste right. Can't afford a water cleaner and is upset that he has to pay for county water that still isn't clean enough. Poultry</p>
Group meeting		Duplin	W	<p>Exhibit #34 (9/2014). Map #14 #CAFOs/Radius: 5/1 miles</p> <p>Nearest hog farm is ½ mile away. Smells closer to spray fields. Hunting. Well water smells like hog waste. Tested 2009 found not safe to drink. Increased costs: Cost of bottled water. Loss of use &amp; enjoyment, rarely goes outside, close window.</p>
9:00 am		Duplin	?	Exhibit # 7 (4/2016). Map #15

<sup>1</sup> Source of drinking water. W=well, P=public system.

Group meeting				<p>#CAFOs/Radius: 4/1 miles</p> <p>9 trucks a day go by house. Stench lingers. More trucks in morning &amp; covers schoolchildren at bus stop. Liquid from trucks permeates the ground &amp; smell comes back after rain. Noise. Spraying near house. No warning.</p> <p>Loss of use &amp; enjoyment (e.g., can't open windows, visit parent's cemetery, hang clothes out, take walks outside). Sometimes has to re-wash clothes due to strong smell.</p> <p>Breathing problems, asthma. <b>Personal Privacy / Ex. 6</b> Thinks hospital visits due to respiratory flare-ups are due to hog-waste pollution. High blood pressure.</p> <p>Daughters also had health problems including nose bleeds, sinus draining, anemia, etc. Missed work b/c of symptoms.</p> <p>Can't fish due to dead/deformed fish in local waters – Northeast Cape Fear River.</p>
9:30	<b>Personal Privacy / Ex. 6</b>	Duplin	P	<p>Exhibit # 15. Map # 16</p> <p>#CAFOs/Radius: 7/1 miles</p> <p>Hog farm 1/2mile. Poultry facility nearby. Odor for 3 days and flies. Loss of use &amp; enjoyment, closed windows, can't hang clothes, no activities outside.</p> <p>On municipal water, but it is brown.</p> <p>Sinus problems, ear problems, asthma problems.</p> <p>Believes will have trouble selling property.</p>
9:30		Duplin	?	<p>Exhibit #33. Map #17</p> <p>#CAFOs/Radius: 7/1 miles</p> <p>Loss of use &amp; enjoyment, close windows, no clothes outside, no cookouts, can't sit on our porch.</p> <p>Increased costs: A/C, cost of drying clothes.</p> <p>Nausea, sinuses, throat</p> <p>Decreased property values. Loss of use &amp; enjoyment, Bad flies for 3 days after spray.</p>
?		Duplin	?	<p>Exhibit # 31. Map #19</p>

<sup>2</sup> Lists others who have lived in the house & may have been affected by it.

<sup>3</sup> Brother lives next door can barely breathe due to asthma that developed 20 years ago.

**Personal Privacy / Ex. 6**



		rd are			#CAFOs/Radius: 7/1 miles  Aerial photo looks like 7 CAFOS - at least 4 hogs farms. Breathing difficulties. Flies. Loss of use & enjoyment, no cookouts.
TEAM A pl		Meeting place:	Personal Privacy / Ex. 6		
after 12:30			Duplin	?	Exhibit 8 (4/2016). Map #1 #CAFOs/Radius: 5/1 miles; 30/3 miles  Waste gets on her car, lawn and home. 1 mile is 25,000 hogs & 8 lagoons. 2 miles is 80,000 hogs Spray in morning & at night. Dead box ½ mile down road near cemetery. Dead boxes smell worse than spraying or confinement houses. 50 feet from spray fields including one across the street. (submitted CD with spraying OGC has not seen this CD). So many spray fields on this road that I smell the hog waste all the way to Warsaw. Medical conditions came after & believes are caused by hog farms: Heart problems, sinus & breathing issues, Sarcoidosis (bacteria in lungs) & eye bacteria. Loss of use & enjoyment (e.g., can't have cookouts, open windows, take walks or garden, hang-dry clothing) Buzzards Increased expenses: laundromat dryer.
After 1:30			Duplin	W	Exhibit # 27. Map # 26 #CAFOs/Radius: 8/2 miles  ¼ mile of spray field. Spray every 2-3 weeks. Sludge disposal nearby. Trucks w/sludge, increasing noise, dust. Odor. Child has sinus issues. Uses well water but buys drinking & cooking water \$10-15 per week. Close windows REACH organizer.
Afterno on			Duplin	?	No declaration

DRAFT

DELIBERATIVE/PRIVILEGED

11/13/2016

	Personal Privacy / Ex. 6				
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MONDAY - TEAM B plus Alexis/		Personal Privacy / Ex. 6		
Time	Name & Address	County	H2O <sup>4</sup>	Concerns (All complain of overwhelming stench/odor)
Btwn 9:00 & 12:00	Personal Privacy / Ex. 6	Duplin	P	Exhibit #9. Map #6. #CAFOs/Radius: 11/2 miles  Loss of use & enjoyment, no cookouts, can't sit on our porch. No clothes outside—extra washing if do. Flies. Nausea, vomiting, runny nose, lung issues, Well water tested by state DWR in Wilmington, told can't drink or cook with it. Increased costs: Had to buy water until hooked up to county water. Had to pay for hook up. Afraid of county water in case there are breaks in the line where hog waste seeps in. Farmer tried to intimidate when found out about well test results. Said her 2 puppies were the cause of contamination. Personal Privacy / Ex. 6 & smell limits use & enjoyment there too.
14		Duplin	P	Exhibit #22. Map #24. #CAFOs/Radius: 10/2 miles  Personal Privacy / Ex. 6 Lives on major road. Odor & particulates from trucks a primary concern. White vinyl siding & can see hog residue on it. Spraying seems to be at night. Can't open house windows. Has severe bronchitis/pneumonia. Lowered house value and can't sell house.
14		Duplin	P	Exhibit #23. Map #25. #CAFOs/Radius: 10/2 miles 10 hog trucks come through every day. Constant bad smell. Persistent cough developed since moving to house in 2009. Can't open the house b/c of odors & idling truck fumes. Loss of use & enjoyment, no clothes outside, can't grill outside or spend time outside. Increased costs: Use air filters, paid to connect to county water because of poor quality well water.
TEAM B plus Alexis/		Personal Privacy / Ex. 6		

<sup>4</sup> Source of drinking water. W=well, P=public system.

Monday 3-4 or Tuesday AM	Personal Privacy / Ex. 6	Duplin	?	Within 3 miles there are 3 large swine operations. Major Murray Hog Farm (AWS310593) with allowable count 1180, I-40 Nursery #1 & #2 (AWS310810) w/allowable count 5200, & Phillips Partners (AWS710042) allowable count 2400.
		Duplin	P	Exhibit #8. Map #5. #CAFOs/Radius: 8/1.5 miles  Loss of use & enjoyment, no cookouts, can't sit on our porch & visit with neighbors, limits 4 wheeling, windows closed. Burn eyes & nose. Sinus infections & nasal problems. Well contaminated, now has town water. Cost for water. Used to fish & hunt for food. No longer fish in or hunt. Hog farm next to Charity Middle School & to Peter's Tabernacle (his church). Flies.
		Duplin	?	Exhibit #17. Map #8. #CAFOs/Radius: 5/? Miles  In past, waste blew onto the house and into the storm door and windows. Trees were planted as buffer, but waste still comes through & trees are now dying. River Road is wet with waste from sprayer. Received verbal/physical threats from farmers. "The county lawyer" wrote letter threatening her with jail time for complaining to DENR or would have to pay hog farmer damages. People in the health field still continue to tell me to close windows when cooking. Loss of use & enjoyment, wear a mask walking to car and can't freely exercise. Headaches, trouble breathing, and depression from spraying. Increased costs: Hooked up to county water & has to pay for it. Can't hunt or fish.
		Duplin	P	Exhibit #10. Map #9.

<sup>3</sup> "My cousins live directly in front of a hog farm. They live closer to the hog facility than I do. When they spray the waste goes directly on them."

## Personal Privacy / Ex. 6

				<p>#CAFOs/Radius: 5/1 miles</p> <p>Can see waste on cars, windows, clothes, and house. Hits passing cars on highway. Flies. Loss of use &amp; enjoyment, no cookouts, can't sit on our porch. Relatives don't want to visit. Embarrassment. Nausea.</p>
	Personal Privacy / Ex. 6	Duplin	P	<p>Exhibit #11. Map #10.</p> <p>#CAFOs/Radius: 5/1 miles</p> <p>Spray fields no more than 200-300 yds from home. Spray residue. Dead boxes. Flies. Buzzards</p> <p>Loss of use &amp; enjoyment, no cookouts, can't sit on our porch.</p> <p>Burn eyes and nose.</p> <p>Increased costs: Had to buy &amp; use clothes dryer. Switched to town water immediately when offered. Cost for county water.</p> <p>Believes will have difficulty selling property. Hogs all around Rainbow Baptist Church. Restaurants near hog farms smell. Clinton &amp; Lundy's pork processing plant smells.</p>
		Duplin	P	<p>Exhibit #12. Map #11.</p> <p>#CAFOs/Radius: 5/1 miles</p> <p>Spray field next door. Feel mist. Odor really bad 2 or 3 days a week. Loss of use &amp; enjoyment, no cookouts, can't sit on our porch, have to exercise inside keep windows closed. Wakes them up in the night.</p> <p>Embarrassment. Burn eyes and nose.</p> <p>Increased costs: AC cost. Cost of town water is discolored &amp; has odor.</p> <p><b>Personal Privacy / Ex. 6</b> - which has hog farm 10 min. away.</p>
		Duplin	P	<p>Exhibit #13. Map #12.</p> <p>#CAFOs/Radius: 5/1 miles</p>

**Personal Privacy / Ex. 6**

				<p>Child (15, now 17). Odor comes 5-10x per month.</p> <p>Loss of use &amp; enjoyment, no cookouts, can't play outside. Closest park is too far to drive. Hog farms affect where she wants to live when grows up. Wallace-Rose Hill High School.</p>
	<div>Personal Privacy / Ex. 6</div>	Duplin	?	<p>Exhibit #29. Map #13.</p> <p>#CAFOs/Radius: 5/1 miles</p> <p>Spray field next door &amp; sprays year round.</p> <p>Loss of use &amp; enjoyment, no cookouts, hold breath b/c on crutches when getting mail, going to deep freezer, no clothes outside, keep windows closed.</p> <p>Increased costs: AC cost. Bought dryer.</p> <p>Health issues, sinuses, bronchitis, breathing, sore throat.</p> <p>Major Murray Hog farm</p>

MONDAY - TEAM C plus Marianne/Devon Meeting place: REACH for tour

1912 W. Webb Bldg. 22

Site	Location (appx.)	Description
Sprayfield in Richlands	34.8766455, -77.569470	Gregory Forks Rd. in Richlands, Onslow County. Sprayfield is in close proximity to residential area.
Sprayer next to Rt. 41	35.066139, -77.414611	Sprayer near Browns 5 & 6, next to the road.
Runoff on Currin Howard Road	35.040389, -77.628278	Runoff from JC Howard. Sprayers and drainage visible.
New River	34.87645, -77.569470	Three lagoons of Howard Farm within 0.12 miles of New River.
Veachs Rd.	35.049050, -77.964133	Sprayer across the street from <b>Personal Privacy / Ex. 6</b>
Dead Box	35.049200, -77.970161	Dead box near <b>Personal Privacy / Ex. 6</b>
Dead Box	35.020683, -77.957800	Dead box on Dr. Williams Rd.
Dead Box	34.98919, -77.95342	Dead box view from road.
Sarecta Road	34.987222, -77.911056	This site is adjacent to a 1,300+ hog CAFO owned by Murphy-Brown. Turn south, not north, onto Bob Quinn Lane. It is not marked, but it is public. Drive back to the dirt road, lagoon will be on the left.
School	34.95221, -77.95102	School within ½ mile of multiple lagoons and poultry facilities. [The nearest school appears to be Kenansville Elementary School, which is at 34.956276, -77.958734.]

Gurman Powell Road	34.962417, -77.903444	Multiple facilities can be seen from this road, which loops off of and back onto Highway 24. Facilities that can be seen include Ed Dail 5-12, which is permitted to house over 13,500 hogs.
South Dobson Chapel Road	34.902056, -77.931778	Multiple facilities can be seen here. Facilities include Carter & Songs Hog Farm (17,000+ hogs) and Melvin Bostic Farm (~10,000 hogs).
Dobson Chapel Baptist Church	1473 NC-50, Magnolia, NC 28453	Church affected by proximity to facilities.
Farrior School Road	34.962417, -77.903444	Can see a lagoon and into a barn from the road.
Runoff from Kilpatrick	34.894000, -77.908861	Can see runoff from two Kilpatrick facilities here.
Creek Near South Dobson Chapel Road	34.902056, -77.931778	32 CAFOs drain into this creek over a length of approximately 3.2 miles.
Stocking Head Creek	34.897853, -77.936319	30 facilities on or near this waterway.
Northeast Cape Fear River	34.979361, -77.86078	Accessible on Sarecta Road. Lagoon is within 0.10 miles of river.
Personal Privacy / Ex. 6	34.731508, -77.959840	Sprayfield 0.4 miles from home



Time	Name & Address	County	H2O <sup>9</sup>	Concerns (All complain of overwhelming stench/odor)
TEAM C plus Elizabeth/[redacted] Meeting place: <b>Personal Privacy / Ex. 6</b>				
afternoon	<b>Personal Privacy / Ex. 6</b>	Sampson	W	<p>Exhibit #10 (4/12). Map #3. #CAFOs/Radius: 2/0.5 miles</p> <p>Spray field couple hundred yards from house. 3 days a week smell powerful (summer) Dead box 2 miles from house 50 ft from road. Buzzards &amp; sight ghastly. Loss of use &amp; enjoyment (e.g., Grandchildren won't visit, can't sit outside, visitors ask to stay inside or leave, can't host or grill outside, avoids going home, wears mask to mow lawn). Sinus problems &amp; allergies year round. Believes cancer/sinus infections among local African Americans is unusually high due to spraying. Gag &amp; vomit if don't have mask. Increased costs: A/C running constantly, on bottled water about \$18/week or \$900/year, buying fish. Can't sell home due to smell. Young people leaving. Don't see people doing outside activities – washing car, basketball, sitting on porches Can't fish due to contamination &amp; has to buy fish from grocery store.</p>
		Sampson	?	<p>Exhibit #35. Map #26. #CAFOs/Radius: 14/3 miles<sup>10</sup></p> <p>Spray field &amp; hog house across the street &amp; in in woods behind house. Sprays 2-3 times per week. Spray field waste on car. Loss of use &amp; enjoyment, rarely lets child go outside.</p>
2:30 Group meeting		Greene	?	

<sup>9</sup> Source of drinking water. W=well, P=public system.

<sup>10</sup> Map show 3 mile radius, but also farther.

DRAFT

DELIBERATIVE/PRIVILEGED

11/13/2016

	Personal Privacy / Ex. 6				

TUESDAY - TEAM A plus Elizabeth/  
Afternoon plus Alexis or Brent (?)

Personal Privacy / Ex. 6

Personal Privacy / Ex. 6

Time	Name & Address	County	H2O <sup>11</sup>	Concerns (All complain of overwhelming stench/odor)
10:00? To be confirmed	Personal Privacy / Ex. 6	Robeson (bordering Scotland)	?	Personal Privacy / Ex. 6 2 CAFOs within 3 miles. Closest bit more than half mile away - the Murphy Brown Farm 5070 (AWS830035) with allowable count of 8800.
1:00-2:00		Duplin	W	Exhibit # 20. Map # 23. #CAFOs/Radius: 8/1 miles  Wind/rain blow waste onto home. Can't go outside. Not hooked up to public water system, so buys bottled drinking water (\$5-10 a week). Can't fish.
3:30 w/Ms. Malloy		Pender	?	Exhibit #18. Map #20. #CAFOs/Radius: 5/2 miles  Unescapable smell, gets in car. Coughing and draining of eyes. Interferes with church activities by forcing events inside. Congregants feel under pressure not to speak out. Tried to complain to Pender County Health Dept. during one bad episode of odor in the church in 2006. Calls not returned. Not tried again b/c under impression they could not or would not do anything.
		Deliberative Process / Ex. 5		

Deliberative Process / Ex. 5

<sup>11</sup> Source of drinking water. W=well, P=public system.

<sup>12</sup> Personal Privacy / Ex. 6

Spray fields are right in front of house. Very strong odors.

	Personal Privacy / Ex. 6	Pender	?	Exhibit # 25. Map #22. #CAFOs/Radius: 9/3 miles Odors. Loss of use & enjoyment (e.g., can't go outside, use pool, open windows). Pays to have county water. Has allergies. Concern about # of local cancer patients. <b>Personal Privacy / Ex. 6</b> Says church is surrounded by hog farms. Can't open windows at church or have events outside.
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TUESDAY - TEAM B plus Alexis/L		Meeting place: Garysburg		
Time	Name & Address	County	H2O <sup>14</sup>	Concerns (All complain of overwhelming stench/odor)
10 am	Personal Privacy / Ex. 6	Northampton		
?		Northampton	?	
11 am Group interview		Northampton	?	
11 am Group interview		Northampton	?	
11 am Group interview		Northampton	?	

<sup>14</sup> Source of drinking water. W=well, P=public system.

TUESDAY - TEAM C plus Marianne, Meeting at REACH and then Serecta Road				
Time	Name & Address	County	H2O <sup>15</sup>	Concerns (All complain of overwhelming stench/odor)
9:00 am	Personal Privacy / Ex. 6	Duplin	?	No declaration
?		Duplin	P	Exhibit #36. Map #28. #CAFOs/Radius: 12/2 miles  Closest less than mile. Loss of use & enjoyment (e.g., can't go outside, no clothes outside close windows, have cookouts, have to wear mask when hunting). County water hook up since Hurricane Floyd when county official hooked everyone up to city water. Have well water access, but county doesn't want us to drink it, but won't tell us why. Used to fish & hunt for food. No longer fish in or hunt near Stocking Head Creek & Cape Fear River b/c of contamination & dead pigs in water & fish with sores. Increased coughing & high blood pressure.
11:00		Sampson	?	Exhibit 3 (4/12). Map # 30. #CAFOs/Radius: 10/3  Animal waste gets on car and home. Loss of use & enjoyment: can't go outside, sit on porch, garden, no cookouts, caretaker for husband who has dementia & can't take him outside. Mosquitos and bugs attracted to spray smell. Sinus headache, trouble breathing, itchy eyes. Prescribed breathing machine, asthma pump, runny nose, and eye drops to treat symptoms. Son has sinus problems and wears a respiratory mask to go outside & cannot cut grass. Husband has diabetes, kidney disease, asthma, and dementia. Increased costs: prescriptions & over the counter medications (\$100), asthma pump, breathing machine, & inhalers, cannot afford some prescriptions or lawn service. Lawn service cheaper than doctor visit.

<sup>15</sup> Source of drinking water. W=well, P=public system.

				<p>Trucks – live &amp; dead animals.  Poultry farms nearby.  Can't afford to sell home because she can't afford to move.  Used to live at B &amp; L Trailer Park in Warsaw. 3 hog farms within 1 mile including hog farm right behind it.</p>
11:00	Personal Privacy / Ex. 6	Sampson	?	<p>Exhibit #6 (4/12). Map #31.  #CAFOs/Radius: 5/1.5  Several spray fields near house.  Loss of use &amp; enjoyment (e.g., can't go outside, grandchildren can't play outside, open windows, no cookouts, can't go on porch,  Gagging, burns eyes, causes itching sensation on skin.  Increased costs: \$120 electricity bill would be lower if could open windows. Husband has COPD which costs \$16/month in medications and is made worse by the smell outside.  Trucks day &amp; night, smell &amp; noise. Has to pull over when driving &amp; hog truck pulls up.  Can see haze in air, thinks from hog spray  Poultry facilities</p>
2 pm		Duplin	?	
REACH office		Duplin	P	<p>Exhibit # 16. Map #7  #CAFOs/Radius: 28/2 miles  House is 1 mile from REACH office. 13 hogs farms in 2 mile radius of office &amp; home.  (Aerial photo shows 28 CAFOs in 2 mi. radius, likely poultry included). Has to eat food inside during REACH meetings because of the flies and bad smell.  Can't fish anymore because the fish are starting to have sores on them. Increased costs:  Believes the lagoons contaminate the well water and had to hook up to the county water system.  Dead boxes - Overstuffed dead boxes attract birds.</p>

			<div>Personal Privacy / Ex. 6</div> <p>Knows about people who have living near industrial hog farmers and dealing with hog-related MRSA. Has found that water bodies tested as having E.Coli, MRSA, and other harmful substances have not been added to the state's list of impaired water bodies.</p>
REACH office	<div>Personal Privacy / Ex. 6</div>		<div>Exhibit # 30. Map # 42.</div> <div>Personal Privacy / Ex. 6</div> <p>No personal statements. Summary descriptions of effects she has seen or heard about.</p>
Site	Location (appx.)	Description	
Veachs Rd.	35.049050, -77.964133	Sprayer across the street from <div>Personal Privacy / Ex. 6</div>	
Dead Box	35.049200, -77.970161	Dead box near <div>Personal Privacy / Ex. 6</div>	
Dead Box	35.020683, -77.957800	Dead box on Dr. Williams Rd.	
Dead Box	34.98919, -77.95342	Dead box view from road.	
Sarecta Road	34.987222, -77.911056	This site is adjacent to a 1,300+ hog CAFO owned by Murphy-Brown. Turn south, not north, onto Bob Quinn Lane. It is not marked, but it is public. Drive back to the dirt road, lagoon will be on the left.	
School	34.95221, -77.95102	School within ½ mile of multiple lagoons and poultry facilities. [The nearest school appears to be Kenansville Elementary School, which is at 34.956276, -77.958734.]	
Gurman Powell Road	34.962417, -77.903444	Multiple facilities can be seen from this road, which loops off of and back onto Highway 24. Facilities that can be seen include Ed Dail 5-12, which is permitted to house over 13,500 hogs.	

Personal Privacy / Ex. 6



South Dobson Chapel Road	34.902056, -77.931778	Multiple facilities can be seen here. Facilities include Carter & Songs Hog Farm (17,000+ hogs) and Melvin Bostic Farm (~10,000 hogs).
Dobson Chapel Baptist Church	1473 NC-50, Magnolia, NC 28453	Church affected by proximity to facilities.
Farrior School Road	34.962417, -77.903444	Can see a lagoon and into a barn from the road.
Runoff from Kilpatrick	34.894000, -77.908861	Can see runoff from two Kilpatrick facilities here.
Creek Near South Dobson Chapel Road	34.902056, -77.931778	32 CAFOs drain into this creek over a length of approximately 3.2 miles.
Stocking Head Creek	34.897853, -77.936319	30 facilities on or near this waterway.
Northeast Cape Fear River	34.979361, -77.86078	Accessible on Sarecta Road. Lagoon is within 0.10 miles of river.

CURRENTLY NOT IN INTERVIEW LIST				
?	Personal Privacy / Ex. 6	Duplin	?	
		Duplin	W	<p>Exhibit # 5 (4/12). Map # 4. #CAFOs/Radius: 10/3 miles</p> <p>2 hogs farms within ¼ mile. Sees spraying. Can see dead boxes from his house. Seeing dead hogs &amp; them being hauled away is disturbing &amp; disgusting. Loss of use &amp; enjoyment: Can't go outside, walk, gardening, can't breathe due to smell, can't breathe or open doors/windows. Trucks with dead hogs &amp; live hogs driving by have horrible smell. Sound of squealing hogs horrible interrupts sleep. Trucks go by once a day. More when moving hogs in &amp; out about every 3 or 4 months. Worries about well water contamination, but county refuses to hook his house up. Worries that the air from hog facilities is effecting his health (e.g., sneezing).</p>
	Personal Privacy / Ex. 6	Sampson	?	<p>Exhibit #26. Map # 36. #CAFOs/Radius: 7/? Miles</p> <p>Talks about events at prior location of Union High School in Clinton. High School has moved. Spray on cars in parking lot. Everyone in school smelled horrible. Clothing would smell and would stink up cars, buses and classrooms. Humiliating. Notices that fishing ponds appear unhealthy. Fish have abrasions/infections and are unable to eat.</p> <p><b>Personal Privacy / Ex. 6</b></p> <p>Off Highway 701 there are 3 hog farms behind the trailer with undocumented Hispanic workers.</p>
offered phone interview after the site visit.		Duplin	P	<p>Exhibit 1 (4/12). Map # 29. #CAFOs/Radius: 15/3 miles.</p> <p>Closest less than 1 mile. Spray gets on house and screens on the windows and doors. Dead boxes on Spicer Road has bugs and vultures. Lots of dead trucks. Particularly bad when it is windy. Comes through air ducts. Has trouble breathing outside. Diagnosed with asthma and has to take inhaler every 3-4 hours and oral medication made worse by the hog facilities. Doctors 2 times per month. High blood pressure.</p>

			<p>Loss of use &amp; enjoyment (e.g., can't go outside, open windows, have cookouts). Well-water is contaminated. County water is brown. Increased costs. A/C cost \$50-\$275/month. County water \$500 connection fee and \$30-\$45 per month, buys drinking water in 5-gallon drums. Can't fish anymore due to contaminated water and ill fish. Feels the hog facilities affects him mentally/physically.</p>
	Personal Privacy / Ex. 6	Duplin	<p>Exhibit # 5. Map # 32. Odors. Spray 3 times per week. Loss of use &amp; enjoyment, no outside entertaining, no walking. Mist in yard &amp; on clothes. Switched from well water. Decreased property values. Watery eyes.</p>
		Duplin	<p>Exhibit # 7. Map # 33. Cost for county water. Odors, flies. Loss of use &amp; enjoyment, no cookouts, can't sit on our porch. Windows closed. Use clothes dryer. Has to mow lawn twice a week b/c of nutrients from sprayers. Decreased property values. Can't sell or rent properties.</p>
		Sampson	<p>Exhibit # 24. Map # 35. #CAFOs/Radius: 3/1 mile</p> <p>Hog farms directly north &amp; south on Bass Lake Road. 3 w/in 1 mile &amp; 7 w/in 3 miles. High blood pressure, thyroid issues, heart conditions, uses oxygen machine. Nephew has regular sneezing/stuffy nose and allergies. Odor caused throat and mouth discomfort. Loss of use &amp; enjoyment (e.g., can't hang-dry clothing or sit outside, no cookouts, flies). Can't fish. Can't have outdoor events at church (Union Grove Christ of Christ, Clinton)</p>
		Duplin	<p>Exhibit # 28. Map # 37 #CAFOs/Radius: 7/1.5 miles</p> <p>Closest hog facility is 5-6 miles away (perhaps the 7 shown in photo are poultry). Odors. Spray. No longer fish. Stepping in waste outside facilities. Trucks – traffic &amp; odors. Loss of use &amp; enjoyment no walking. Dead boxes.</p>
		Duplin	<p>Exhibit #32. Map # 38. #CAFOs/Radius: 4/1.5 miles</p>

	Personal Privacy / Ex. 6		<p>Many of impacts described are from when lived on Sarecta Rd. Odors from trucks, fluid from trucks, spray fields. Odors in clothes &amp; hair. Laundromat costs. Bad well water smelled like rotten eggs. Current issues are general to the area, not current home. Thinks adding to allergies.</p> <p>Odors at church (Personal Privacy / Ex. 6)</p> <p>Brothers don't fish anymore green stuff grows in the water. Flies. Loss of use &amp; enjoyment, no cookouts. Source of drinking not clear.</p> <p>Drives to work from Beulaville, to Hallsville, thru Kenansville to Warsaw – hog farms all the way.</p>
	Personal Privacy / Ex. 6	Duplin	<p>Exhibit #2 (4/12). Map # 39.</p> <p>#CAFOs/Radius: 5/1 mile</p> <p>Spray burns eyes. Can't eat outside or hang-dry clothing due to smell. Due to odor has allergies, headaches, uses humidifier and other health issues. Grandchildren couldn't play outside and had runny eyes and sneezing. Had to pay \$500 plus monthly fees to connect to county water due to unsafe well-water. Lower property value.</p>
		Columbus	<p>Exhibit # 4 (4/12). Map # 40.</p> <p>#CAFOs/Radius: 2/2 miles</p> <p>Lower property value. On city water but doesn't trust the water quality; water doesn't smell or look clean. Skeptical of drinking water. Doesn't garden due to fear of contaminated groundwater.</p> <p>East Bladen High School – odor was embarrassment 2004-2007</p>
			<p>Exhibit # 6. Map # 41.</p> <p>Riverkeeper/Waterkeeper Alliance. I have participated in water monitoring on Stocking Head Creek, on a 3½ mile stretch of water with more than 30 CAFOs.</p>

**EPA**

**Moderator: Jonathan Stein  
May 12, 2016  
11:05 a .m. ET**

Operator: This is Conference #160552132

Conference record has joined the conference.

Female: Hello?

(Jill Johnston): Hello. This is (Jill Johnston).

Female: Hi (Dr. Johnston). Is Marianne on the line yet?

Mariane Engelman Lado: OK, you know what? We were mute. My apologies. So this is Mariane Engelman Lado from Earthjustice and I'm here with three colleagues and I'll let them introduce themselves.

Alexis Andiman: This is Alexis Andiman, also Earthjustice.

Brent Ducharme: Brent Ducharme from the UNC Center for Civil Rights.

Elizabeth Haddix: And Elizabeth Haddix, also from the Center for Civil Rights.

Female: Hi there. Who's there at EPA?

Ericka Farrell: OK. We got Ericka Farrell from OCR Title VI Office.

Jeryl Covington: Jeryl Covington from OCR Title VI Office.

Mary O'Loan: This is Mary O'Loan. I'm from the Office of General Counsel.

(Johanna Johnson): Hi. This is (Johanna Johnson) also from the Office of General Counsel.

Ericka Farrell: Hi there. Thank you. OK. Good afternoon. Again, this is Ericka Farrell from the Office of Civil Rights Environmental Protection Agency in Washington, D.C. and thank you for taking the time to talk with us. And please be aware that this interview Dr. (Jill Johnston) is being recorded. And, are there any objections to recording this interview?

(Jill Johnston): No.

Female: Dr. Johnston, do you have any objections.

(Jill Johnston): No I guess.

Ericka Farrell: OK. Thank you. And as you know, your August 2014 study was submitted to OCR to alive (upon) in this investigation. And so whether North Carolina, Department of Environmental Quality Regulations that's (might) bidding operations, discriminate against African-Americans, Latinos, and Native Americans on the basis of race and national origin in neighboring counties and violation of Title VI and EPAs implementing regulations.

And today we plan to ask some – ask you some fundamental question. I'm sorry, foundational questions, regarding the study in order for the OCR to determine whether we can rely on this study for our investigation. And in doing so, we are trying to understand what issues and arguments may be raise in opposition to your study. And we may need to ask you further questions at a later date.

And as we get started, we're going to start right now, Dr. Johnston with just some basic background questions. And can you please state with the record your name.

Mariane Engelman Lado: I'm sorry. Ericka – Ericka, if I can just interrupt you for a second. I just want to make sure, there were two studies that Dr. (Wayne) and Dr. Johnston did conducted and then we submitted. One was the 2014 which you mentioned and the other was the revise version that's dated that it was exhibit 12 to submission earlier this year. And it was dated October 19th, 2015 and it's based on that current set of (hub) facilities that are under the general (permit). I just want to make sure both are in front of you.

Mary O'Loan: Well Marianne, the other one is not. The second only update. That's going to be one of our question. I'm sorry. This is Mary O'Loan. That was going to be one of our questions. Jeryl is now looking to see if we have it in our record.

(Gerald Cadington): Right. As if Exhibit 12, that's the decoration by (Jessie May Ringen).

(Jill Johnston): No. She sent on something –

Ericka Farrell: So Jeryl, is not Exhibit 12 to the complaint. It's attachment 12 to a subsequent submission that we made in 2016 that contains (Steve Lings) declaration and it contains the revision of the study.

Mary O'Loan: What's the date of that because they're think – this is Mary again.

(Jill Johnston): OK.

Mariane Engelman Lado: They're faking their head like OCR doesn't have it. April as well as, you did received it. I'm certain of that. April 12, 2016. And it had – and this is attachment 12. And it's important, you know, that we'll get into the methodologies and all that.

But you know, we wanted to make sure that there was a study of the actual data under the new permit. And these provide study is based on that, the data under the new permit.

(Jill Johnston): OK.

Mariane Engelman Lado: And we should go ahead even if you can't find it, you can ask questions based on the first study and we can resume it another time. That will still be helpful I'm sure. But it's important that you have that second study.

Mary O'Loan: (Marianne) – this is Mary again. Are you at your desk? I mean can e-mail it to Jeryl?

Mariane Engelman Lado: Yes. E-mail it to all of us so that at least we know we have it. They'll go back and look for it. But I just want to make sure that we do get it today.

Ericka Farrell: But I also agree with you. Because I think methodology change from the report submitted with the complaint today. The questions would be the same. It's just a matter of the conclusions and results, right? That's what would have change potentially.

Mariane Engelman Lado: That's right. I mean, I'll let Dr. Johnston speak and she'll answer specific questions about that. But the basic methodology is the same – there was – there may have been some twists that when you focused on it, she can answer questions about. So Alexis is forwarding it and – who's – so who's going to – if they look for an e-mail who would it be from?

Alexis Andiman: (There's) just one e-mail I can send it to you and I'll just forward it to you right now.

Mariane Engelman Lado: Who should we send that for?

Alexis Andiman: Covington.jeryl.

Mariane Engelman Lado: OK. Got that.

Alexis Andiman: @epa.gov.



Mariane Engelman Lado: We do not – yes, we do not received that. I don't have a copy of that.

Female: Hi. So back to the beginning.

Ericka Farrell: Yes. For the record, Dr. Johnston, can you please provide your full name?

(Jill Johnston): Jill Elizabeth Johnston.

Ericka Farrell: And please provide your professional contact information specifically. Your office address and office telephone number and office e-mail.

(Jill Johnston): Yes. It's 2001 North Soto Street, Los Angeles, California 90089. My office phone number is 323-442-1099 and my e-mail is jillj@usc.edu.

Ericka Farrell: Thank you. And as we begin, can you also state what your current professional position is?

(Jill Johnston): An Assistant Professor of Preventive Medicine in the Division of Environmental Health at the University of Southern California.

Ericka Farrell: OK. And as we begin, also, can you give us what your professional background is in relation to the studies that we're going to be talking about today.

(Jill Johnston): Yes. I have a PhD in Environmental Science and Engineering with the minor and public policy from the University of North Carolina at Chapel Hill and also completed a Post Doctoral Fellowship and Environmental Epidemiology also at UNC.

Ericka Farrell: OK. And now, I'm going to (time) this over to Mary.

Mary O'Loan: This is Mary O'Loan. Dr. Johnston, Marianne's probably explain to you one of the reasons that we wanted to speak with you. And after we go through the questions that we have, you can see why it was very good idea for us to speak

## Personal Privacy / Ex. 6

So, we really appreciate you taking yourself available to answer these questions with us. Because I think, there a lot of them and a lot it explain from the fact that don't have a particular background on this. So, we're going to ask you probably some very basic questions from your perspective.

(Jill Johnston): OK.

Mary O'Loan: But the first one is your role in the – we're going to talk first about the 2014 study. And your role in that study.

(Jill Johnston): Yes, so I collected the data and conducted the analysis and consultation with Dr. (Ling) and created that the table and figures n this report and help with drafting the tax. But Dr. (Ling) had the lead on writing the text for this.

Mary O'Loan: OK. With this study peer reviews or did it go through any kind of even in the formal internal sort of peer review?

(Jill Johnston): There was discussion with other faculty within our department at University of North Carolina but it was not submitted or considered under scientific peer review process for our journal.

Mary O'Loan: OK. And we might as well ask the update that was done. Is it similar?

(Jill Johnston): Yes, (inaudible) often not submitted or has been under a scientific peer review.

Mary O'Loan: OK. Do you – and Marianne I don't know if this is – this is may be a question for you. I don't know if it's for you or Dr. Johnston but was the – was the 2014 study submitted to North Carolina DEQ?

(Jill Johnston): No.

Mary O'Loan: OK. Or do you know if they're aware of it?

(Jill Johnston): Not to my knowledge.

Mary O'Loan: OK. All right. Now we're going to get into sort of a knots and bolts of the questions that we had about the study itself. So, Dr. Johnston, do you know – can you explain why three miles was chosen as the distance?

(Jill Johnston): Yes, so we based that on a few (pay existing) peer reviewed scientific studies. One is by (May Adelli) from 2006 that specifically looked at asthma prevalent in Medical school students in North Carolina and found that medicals are there a few mile (radius) of an industrial hub operation had higher prevalent of asthma, another asthma related symptoms, some type of students who went to school further away.

Also some (dispersion) modeling of hydrogen sulfide conducted of a large (hub case) in Iowa show that hydrogen sulfide can travel up to this 6 kilometers which is a little three miles from the facility itself and impact (air) quality in that radius. And there was also sort of two other studies that looked at, the relationship between hydrogen sulfide protections and (inaudible) one from North Carolina and one from Iowa.

The one from North Carolina being by (Getry) in 2016 and then by (inaudible) in 2013 that used 5 kilometers as their distance.

Mary O'Loan: OK. Thanks. Did you by any chance look at other distances or analyze other distances that weren't discussed in the 2014 report.

(Jill Johnston): Yes. So we did not. We considered different criteria for inclusion of senses blocks, you know, whether any part was within three miles or whether they're (centroid). But we didn't have a capacity that compare our three mile results to two miles or one mile or refresh some other criteria.

Mary O'Loan: OK. How was – so (there's) the question. How is the (block centroid) determined? Was it be graphic, vocation or?

(Jill Johnston): Yes. So it's within our GIS software with you know, the sentence lock data from the U.S. and to 2010. And then, yes, the program assigned the (centroid).

Mary O'Loan: So it assigned that based on the geographic center of the block not something to do with the population.

(Jill Johnston): It had nothing to do with population, yes. It had to do with what's (facial) definition of where the (centroid) would be based on the shape of the block.

Mary O'Loan: OK. For the study area, 19 counties were excluded that didn't have an IHO and didn't boarder one. Why was it important to exclude those 19?

(Jill Johnston): We thought it's appropriate to consider population that were potentially at risk for being near an industrial hub operation. And so, just the geography and (mountainous) nature of Western North Carolina, you know, as well as highly urbanized areas. Or just not locations where (capos) would be sided. So we didn't consider those population at risk and that did not include them in the study area for this analysis.

Jeryl Covington: Yes. This is Jeryl Covington. You do have one question on that one. You all were also excluding the counties that were adjacent to and had no – please give – can you explain the basis for that exclusion as well to the 19th county in the Western North Carolina area.

(Jill Johnston): So it's with the counties where they had any two criteria. One is they had no (capo) in that border and no adjacent county for them had any (capo). And it's largely because these areas are highly mountainous and don't have the facilities or that the land maps that you need for the liquid waste distribution system. For a (capo) to be permitted there.

Jeryl Covington: OK. All right.

Mary O'Loan: This is Mary again. What is the – can you explain the adjustment for morality and is that the same thing as adjusting for population density. And then why was that appropriate?

(Jill Johnston): Yes. So – yes. The – so the content of reality we measured it by population density for each (inaudible) block. And we find this – and so we present those to unadjusted and the adjusted values in the report. But find that this is important because the land availability and also typically the price of land is highly influence by the population density in the amount of land that is available.

And also different (inaudible) of which racial or ethnic group within which areas can be – can influence population density as well. So that's why we – we chose that content of both the marker of kind of the economics and the land availability to adjust for in the model.

Jeryl Covington: This is Jeryl again, could you – could you clarify the land availability. I wasn't quite clear on that explanation.

(Jill Johnston): OK. Yes, so, I mean. As I mentioned before, now do you need the barns to how is the animals but then also you know, field around it where the waste that's spray. So an area with the high population density, you're not going to have – it's not necessarily going to be appropriate to have the space availability to put a (capo) on those areas or to put as many.

And I sort of – it's basically, you know, the land available for agriculture can basically correlated with the population density of that area.

Mary O'Loan: But that was – OK. This is Mary again. Because I – you can't see me but my brain is cranking very slowly. But, so this is not because you were excluding these areas because you've already excluded the 19 counties that have nothing. Now you're doing an adjustment to say, to basically say that OK, in the – to find that the (sparsely) populate – maybe we'll get into when we get back into the table in explaining those. But I'm trying to understand that the fundamental points of why you did it.

And it is to say that these things tend to go in really rural areas. And you know, as we look at areas to get more and more rural, we also see, you know, where they are. The amounts of (inaudible) there are and a change in the demographics. That's why you're doing the morality piece to it?

(Jill Johnston): Yes. And it's sort of a contact of, I guess they're familiar with confounding and other epidemiological model. So we felt that population density is a very important factor that influences deciding of (inaudible) (capos). And so, that's why we presented sort of adopted models to acknowledge that fact that population density and sort of a proxy for both the cost of land and the, sort of amount of land that would be available for either cultural activity was important to consider when we're looking at the association between race and committing of how (capos).

Mariane Engelman Lado: This is Marianne. Can I jump in for a sec. Stage 4 of the 2014 reports. Dr. Johnston, you have – if there's a sentence there that says, by adjusting for populations density or morality, we compare racial vulnerability that IHOs for racial groups within each level of morality to –

(Jill Johnston): Right.

Mariane Engelman Lado: I think that's what you're getting at. Can you explain that a little bit more that is – so it's not taking away the family ins of (racist) testing for it by looking within each level were up. Or I can even say the word, morality. Is there still salience of race towards this outcome?

(Jill Johnston): That is correct and we try to provide an example here that perhaps a little bit more intuitive. But for example, like when you're looking at mortality rate and you want to compare across two populations. It's important to account for age because of risk of mortality changes with different age groups.

And so at the age structure of the two populations aren't equal, you want to address for those factors or account for those factors so that you can look with any to age group. So essentially, we're trying to account for the same thing

here that is not (inaudible) that perhaps your risk for a (capo) being permitted nearby. You – is different depending on the population density of the area where you leave.

And so by including that adjustment, we can account for those differences across different areas in North Carolina.

Mariane Engelman Lado: OK. Is everybody good on that right now? OK.

Mary O'Loan: OK. Can you explain the study state live weight calculation? So we're on page 4 again of the 2014 study. And how did you determine whether the study state live weight of an IHO should be included and I – this is – it's not about the calculation of the city state live weight but more – how you captured a particular IHO. And I sort to have two visual images in my mind. And one has – you take the (centroid) of a block. And you draw a circle three miles out, right?

(Jill Johnston): OK.

Mary O'Loan: This is what I'm thinking happened. And the latitude and longitude of any IHO that still within that three mile circle is what you counted. Is that right?

(Jill Johnston): Correct. And it was some, but yes. We started the (centroid) of each block. And did exactly what you describe.

Mary O'Loan: Because, well we were trying to figure out whether there was anything – whether it was like if you had, instead you were pulling. If there were a block that (startle) the three mile circle, you know, you would pull an IHO that might be sitting in that block. Do you know what I mean? But that's not what you did. You just – it was if the latitude and longitude of that (cape) of fit in the circle. Then it was added to the total weight.

(Jill Johnston): Yes. So in essence, each (capo) was not counted one time. It could be counted multiple times depending on how many blocks it was within three miles from.

Mariane Engelman Lado: This is Mariane Engelman Lado again. Dr. Johnston, if there was a (capo) that startled those that three mile radius or within one radius and another radius, how would you handle it?

(Jill Johnston): Yes. So we were reading on analysis is the sense of block. And so for each senses block sort of independent or the other ones, we would draw to three mile radius and count up every (capo) that sell within the three miles. And then we would go to the next, you know, the adjacent block to it. Draw a circle in count of every (capo) within three miles of that block.

And so, the son of the (stead) state live weight, could be counted, you know, if not, we didn't assigned each (capo) only to one block. Reassign each block to the nearby (capos). Either that help explain it?

Mariane Engelman Lado: I think so.

Mary O'Loan: Well, so then the next, I guess my next question is when you look at the people. So the latitude and longitude has to be within third, three mile circle. And then when you count the people, how are you doing that?

(Jill Johnston): So the people aren't counted more than once. We include the population of each fences block. So, all the – there are the hundred people living in the senses block. They're all assigned the same study state live weight based on what the three mile radius.

Mary O'Loan: OK. OK.

(Jill Johnston): So people are not counted more than once in the model.

Mary O'Loan: OK. I get it. Anybody else have any question about study state live weight? All right.



OK, the next question was about you know, asking you about the update. Did the update happened but we know that it did. So, we will skip that one and come back to it at a later date probably.

(Jill Johnston): OK.

Mary O'Loan: So on page 4, you describe how race in ethnicity was categorized. But then when we look at the complaint, we went – and we look at page – where is that? 106. 106.

OK, on page – I don't know what – 35 of the complaint. It also talks about the characterization in particular of African-Americans. And the description seemed inconsistent to us. And it had to do with (inaudible) people who could identify themselves as black and Hispanic.

And so, we were wondering if these two – if the state (meant) about it on page 4 of the 2014 report and put note 106 on page 35 of the complaint, whether they were inconsistent or weren't inconsistent or you know, like how we should be interpreting this.

(Jill Johnston): I mean, so I can describe the definition we used in the report and then maybe Marianne can talk about the footnote. But we used sort of one other race category. And so, our definition of race was anyone who identified it – identify themselves as African-Americans are black list or without any other race or ethnicity.

So if they identified as black and Hispanic, it would be categorized in this black group. So that's how we did it for the purposes of this –

Mary O'Loan: OK. I'm sorry Dr. Johnston in – on page four it says black. It's people who identify themselves as African American or Black with or without any other race. Is that right? I thought just heard only without – with.

(Jill Johnston): Yes.

Mary O'Loan: I'm sorry without.

(Jill Johnston): No, I'm sorry for the fact that I misstated. No, I meant – yes, (inaudible) written here is correct. So it's –

Mary O'Loan: And then footnote 106 says the term African American here in core sponsors turn black as used in the report it – the black racial category referred to those who identified as African American – that's probably a typo. It should be with or without.

(Jill Johnston): OK, all right.

(Johanna Johnson): Hi this is (Johanna Johnson). I just one quick follow up question. And that's with regards to individual to identify themselves as Black Hispanic. You indicated they will be categorized in the black category. But would they also appear in the Hispanic category as well?

(Jill Johnston): Yes, So I would note one of the table these terms but the definitions of Black, Hispanic and America Indian. We do not use mutually exclusive terms or mutually exclusive categories. So people when we do the race specific analysis they could be counted with more than one race based on what they identified on their (inaudible) forms.

Mary O'Loan: OK, any other –

(Jill Johnston): But the category of non Hispanic white and people of color. Those are mutually exclusive. So there's no one that overlap, you know, which is what we use for our primary analysis.

Mary O'Loan: Right. Anything else?

(Johanna Johnson): No.

Mary O'Loan: OK. Now what we'd like to and (Mary Anne) maybe you can help in the updates that was (inaudible). You know is it just the numbers that have changed? Well let me explain what I'm going to do here.

What we wanted to do was walk through in a study. Each of the tables – each of the figures and table to make sure we understand what they say. and then we wanted to look at them – look at how they're characterized in the complaint because one of the things that we have to do as discussed it internally is be able to communicate in layman's terms how these – what these findings are. So we want to make sure that we understand it and we can see that, you know, the complaint takes, you know, right up something.

And so we wanted to see – we wanted to make sure that, you know, within study or I mean what within the complaint could, you know, use that as our layman's discussions. That we wanted to cross walk these things but also go through them and make sure that we actually understand, you know, what the study itself is saying. OK.

Mariane Engelman Lado: Yes, let me give some context and I don't know if this will be helpful or not but let's try. First of all Elizabeth reminded me and we will double check. When we filled the complaint we probably sent a copy to (Inaudible) are now DEQ.

There were some confidential documents in there. So we didn't send the whole thing. And we'll have to go back and check our records and let you know what we sent and what we didn't. I don't see any reason – I mean this was not a confidential document. But I just don't remember.

So and I'm not sitting in front of the, you know, my computer where I can pull up exactly what was sent to DEQ. So we'll do that and we'll get back to you on that. In terms of the difference let me tell you our thinking and methodology as complainants. And then Dr. Johnston can say a little bit about what might have been different if you remember Dr. Johnston.

So we obviously wanted to get even though the 180 day requirement is waivable we wanted to get a complete set of allegations into OCR within 180 days. So we wanted to do – just a submit a disproportionality analysis that was rigorous within that 180 day timeline. The challenge is the 180 day timeline the data – I think it wasn't even up on the Website for DEQ then DNR. But it was and not with sufficient notice to be able to ask Dr. (Ling) and Dr. Johnston to do an analysis.

So talking to – knowing that there wasn't going to be that much difference in the location of these facilities for technical reasons which you maybe aware of that any new facility in the State of North Carolina have to use new technologies. And it's only pre-existing facilities that haven't expanded that under the state the general permit. So while some facilities may drop out of the list there are not going to be any new facilities on the list.

And there's kind of disincentive to drop out. So we knew there wouldn't be that much change. So we did ask Dr. (Ling) and Dr. Johnston if it made sense to do the disparities analysis first on the list that existed at the time right before we filed the complaint which is what they did with the – and then and they could refine their methodology by doing that building on the work that they had previously done on disproportionality.

And then once – once we had the list and I should say and Dr. Johnston you can talk more about this. There was a lot of work that went into that. There was a lot of clean up of the data. The – the geographic locations often weren't right.

There was just a lot of work that went into working with that list. And then they were able to provide the 2014 disproportionality analysis. But with the full intent that once we had the – the list of facilities that had been approved for operation under the challenge firm and are under the new permit they would then conduct the same analysis.

But I say the same kind of in quotes because if there were any – any lessons learned or any tweaks that the new data provided that they would – they were

free to kind of have the best analysis possible. So, you know, again Dr. Johnston can refresh my memory to precisely what tweaks there may have been. But I don't want to state that the only difference is in the results because there was an opportunity to have a fresh look at the methodology – fundamentally the methodology was similar. But they were able to tweak the way they were doing things in order to do the best study possible.

(Jill Johnston): Yes, so the major difference is there were 2,055 cases included in the 2014 analysis. And then for the updated analysis based on the permit list there were 2029. So, you know, that was a major change for facilities that do not undergo permitting or ones that where their permit expired and we do have any evidence that they were going to like renew their permit.

What we tried to do in the 2014 analysis was use the best available knowledge we had about which – which tape off (inaudible) to include. So we did get some additional information from the state about which ones were not operational and which ones may have had permits but had zero animals housed there. So we did make some adjustment in this first paper to try to anticipate what would be included under the general permits.

But in terms of the methodology the analysis and the tables provided are the same. We changed the figures a little bit to try to make them look nicer and we also – there were 20 western counties excluded and that was using the same criteria as we did before. But there was just one additional county that met these criteria.

Mary O'Loan: OK. Yes, OK. Well that was a good explanation. So can we now turn to the – we're going to work from the 2014 (inaudible) you know what we have in front of us. And maybe when you made the changes some of our questions will be answered.

But I just – I wanted to start on page 11 just with figure 1. And I have no questions about that. Now I'm moving on to figure 2.

Mariane Engelman Lado: OK.

Mary O'Loan: OK. It says the percent of population living within three miles of an IHO in relation to the percent of people of color. Is that the percent of the population in the green study area or the –

Mariane Engelman Lado: Yes, so all of the data and all the table and figures provided here are from the study area. So figure 3. So in the complaint figure 3 is described on page 35 in paragraph 133. I should (inaudible).

And I guess the – what were asking you Dr. Johnston is well I guess do you agree that this statements states what your study shows and what that figure shows I guess?

(Jill Johnston): Can you read the statement please?

Mariane Engelman Lado: You don't have it? I'm sorry. It says as shown in the following figure which depicts the relationship of industrial swine facilities to the racial and ethnic composition of North Carolina swine facilities are clustered in communities of color.

(Jill Johnston): Yes, I would agree with that statement.

Mary O'Loan: OK – flipping.

(Jill Johnston): And now just to note this becomes figure 2 actually in the updated report. And here we kind of just have three categories of people of color. Anyway it's displayed more closely than how we conduct the analysis in the updated report.

Mary O'Loan: What do you mean? I'm not sure I understand what you mean.

(Jill Johnston): (inaudible) – so we actually had like six – six categories that we assign census blocks into six racial category. And on this map but as original figure in order to simplify it we just show three categories under 20 percent, 20 to 40 percent and then above 40 percent.

Mary O'Loan: We – that was actually a little hard to hear. Can you say that again?

(Jill Johnston): I'm sorry. So on this figure the figure 3 we show – we just showed three categories just that we simplify for purposes of displaying the information which was less than 20 percent, 20 to 40 percent and greater than 40 percent whereas in the updated figure we show all six categories that we use for our analysis. So it's just a minor and it doesn't impact my interpretation of it.

Mary O'Loan: OK.

(Jill Johnston): But just to note if we were discussing these changes between the two versions. That was one. We just changed how we displayed the information.

Mary O'Loan: OK. in the updated version it's figure 2 on page 11.

(Jill Johnston): Yes.

Mary O'Loan: OK. So now we're moving on to table 2. So table 2 is – table 2 is discussed in a handful of paragraphs in the complaint. So I guess I will just read them to you one at a time.

So this is paragraph 132 on page – I don't know what – wait. 13, so it's 13. No. It's not. What am I talking about? 35, paragraph 132 on page 35 of the complaint. And we are talking about table 2 on page 13 of the study.

Paragraph 132 says analysis of the populations statewide yields consistent result. The proportionate of African Americans, Latino's and Native Americans statewide living within three miles of an industrial swine facility are 1.4, 1.26 and 2.3 times higher than the percentage of non Hispanic White respectively which (inaudible) is varied are also statistically significant. Is that right?

Mariane Engelman Lado: Yes, table 2.

Mary O'Loan: I would note that refers to both page 6 and table 2 of the report. The (inaudible) 32, 132.

Mariane Engelman Lado: OK.

Mary O'Loan: That is basically your sort of quoting page 6. Is that what you're saying?

Mariane Engelman Lado: I believe so.

(Jill Johnston): So that statement I think maybe actually doesn't draw on table 2 that we have shown here which is just for the study area. I think – I believe those numbers that you've read are for the whole state for a statewide analysis where we don't exclude any areas.

Mary O'Loan: OK. So which table should this or this about? Where are those results displayed? Here. It's the first paragraph on page 6, OK.

(Jill Johnston): I am not sure of all the tables from our statewide analysis were included in the documents sent to you.

Mary O'Loan: You mean – OK. So the document dated August 29th, 2014, Industrial Hog Operations in North Carolina. What you're saying is there's results discussed in the text that aren't displayed in the table or figure.

(Jill Johnston): Yes, so all the tables and the figures provided in this document are just for the analysis where we restructured to the study area as (inaudible) –

Mary O'Loan: OK.

(Jill Johnston): But there was a parallel analysis that didn't restrict that like included all (inaudible) in the State of North Carolina as of these results included in the text on page 6 (inaudible) analysis that uses the entire population.

Mary O'Loan: OK. OK. Just to draw your attention to paragraphs 131 and 132 of the complaint. 131 says analysis based on the study area that excludes the state



five major cities in western county. And then goes on to give the numbers. And then paragraph 132 by contrast says analysis of the population statewide yields consistent result.

So paragraph 131 is about the data in the study area and paragraph 132 says it's consistent but here are the numbers for the state – for a statewide run. Is that correct (Jill)?

(Jill Johnston): Yes.

Jeryl Covington: So 131 again is just for the state –

(Jill Johnston): OK.

Jeryl Covington: Or Statewide?

Mary O'Loan: Paragraph 131 says analysis on a study area so it's for the state but only the study area within the state. And that's what the tables reflect. Paragraph 132, the very first sentence says analysis of the population statewide yields consistent results.

So that's – those numbers 1.4, 1.26 and 2.39 which are the same numbers that appear at the top of the report on page 6 first paragraph is the statewide numbers not just the study area.

Mariane Engelman Lado: So the reference table is not because those numbers come from table 2. But because table 2 – wait. What is it? It's not about – the reference to table 2 should probably be like C also. It's – you know I think table, I'm sorry.

Page 6 is the actual support where table as – as Dr. Johnston said seems to be only the study area. Is it all state in the original?

Jeryl Covington: Well it's racial and ethnic composition of (inaudible) is blocked within three miles of an (inaudible) IHO and more than three miles. So it's the study area excluding the western county.

Mary O'Loan: (inaudible) the study.

Jeryl Covington: Let me (inaudible) –

Mary O'Loan: OK, so I'm sorry. So this paragraph is basically saying that the statewide results are consistent with table – the proportions are consistent with table 2 which is about the study area?

Mariane Engelman Lado: Right.

Mary O'Loan: Dr. Johnston is that right?

(Jill Johnston): Yes, yes, so yes, I open up the – I found the document. So yes, so 131 is the proportion matches within table 2 and then 132 is referring to the state wide analysis with no exclusion areas in which that we did not show the table in this report.

Mary O'Loan: OK, great. We're going to go to – I think so paragraph 140 in the complaint I think it's sort of repeat of that. The statewide proportion of African Americans living within three miles of an industrial line facility – statewide is 1.4 times higher than the proportion of non Hispanic white in that site, table 2 and in page – table 2 and page 6.

(Jill Johnston): Yes, I believe that's the – as the same (inaudible) one about matches that the table. In this report that is the study area and then 140 versus the statewide analysis.

Mary O'Loan: OK, 142. OK, so the next paragraph then is 142. Are we having the same issue here – the same thing going on. African Americans make up a larger portion – proportion of the population living in (inaudible) industrial

(inaudible) and the proportion of the population living within three miles away from any facility with disparity.

(Jill Johnston): I believe that (inaudible) right that the 20 percent of African American compared to 13 percent of non Hispanic white that live within three miles of a (inaudible).

Mary O'Loan: I'm sorry were you quoting again from paragraph 132?

Mariane Engelman Lado: What are you talking about 142?

Mary O'Loan: 142, OK, thank you.

Mariane Engelman Lado: (inaudible). And it doesn't provide the numbers. But I believe the reference seems appropriate.

Mary O'Loan: OK. And the statement is accurate? 142, OK. Now were moving to 148.

Mariane Engelman Lado: Yes, that's the same. That's in reference to the statewide analysis.

Mary O'Loan: OK and that's accurate?

Mariane Engelman Lado: Yes.

Mary O'Loan: And 150. That's 0.2. This is a – Yes, I believe that is correct.

Mariane Engelman Lado: OK. So I'm just trying to reach back and – and Dr. (Johnson) you may remember as well these reference to table 2 there are different ways of looking at them. And one maybe that we met kind of the report six provides the information. It's more like a see also table 2 with consistent results. But – but the other way of thinking and I remember that there were lots of charts and tables with the numbers.

And I think and again Dr. (Johnson) you may remember better than I. We may have taken some charts and tables out simply to make it all more

presentable because it was kind of too long and too much. And if we did could this table 2 could have referred to statewide analysis.

I just don't remember if there was an earlier job with more tables but I seem to have some vague recollection and if so that it may just be kind of type o. But again it's also perfectly consistent, you know, that we may have just thought it also supported by table 2.

(Jill Johnston): You're are correct that some variation of all these tables included everything from the study area analysis and then a repeat, you know, maybe like, you know, 2A and 2B or something. I don't know exactly how we weighted it out but sometimes the study area to the whole state analysis. So it could have drawn on that.

And maybe the different iterations change. We try to not have quite as many table.

Mary O'Loan: Well I'm – this is Mary. I'm beginning to think maybe it would be a good idea to send all the tables in because I know that, you know, there were some questions here about numbers and stuff. So we could certainly look for any tables that we had that included the statewide analysis which is the piece here and because, you know, if we have something.

Also, you know, as these tables were being developed Dr. (Ling) and Dr. (Johnson) may have gone back to the data and tweaked, you know, and found that there was a mistake that we included (inaudible) or we included something else that had to be cleaned. So I don't want to send over stuff that isn't correct, isn't final, right? But because – because they worked on this and I said before there was a lot of work going into refining the data and then refining the methodology.

So but what we can look to see if there were – I do have a recollection that we may have had some near final tables that might have included the statewide data. And we just thought it was too much. So if we have that we can

certainly send that over and we'll look for that. I'll put a star next to that as a to do.

Mariane Engelman Lado: All right, thanks and when – just asking. So the tables don't have headers on them. they're descriptive like the ones that are here. So table 1 is –

Mary O'Loan: I'm not sure were looking for a totally free standing table or is Dr. (Johnson) said it may have been this table was an additional column. And we just thought it was too confusing to have all that information in one column. It's that kind of thing.

So – so it would have a header, you know, if it were a near final version. But I just don't – it's a couple of years ago. And by the time the revisions came long it was more like using this 2014 version as a base so some of these questions weren't revisited again

So its two years ago and I'd have to look back and confer with Dr. (Johnson). But I think there maybe something that we can send over to you with statewide data.

Female: Yes, we may have to format I'm not sure all the information ended up in this final format but the version of the data available.

Mary O'Loan: OK, all right. So turning back –

Female: Just to be clear as I read this and Mary you can correct if you're looking for something that I'm not thinking or Dr. (Johnson) correct me if I'm wrong about this. But the data is actually in on page 6. It's just that it's not presented in, you know, in table 2 and the references from table 2 and that's a little confusing. So if we can find that so it I'm happy to do that. But it doesn't -- Dr. (Johnson) does it change any of your conclusions or is there anything different or new about that data?

(Jill Johnston): No, I think it's consistent with what we – with the table that we show. And that, you know, the number and the text and what seems to be in this complaint form are correct.

Mariane Engelman Lado: OK. So, you know, we wanted to – I'm looking at the clock it's five after four. But we wanted to, you know, March through sort of these paragraphs to have you, you know, do what you've been doing so far which is that it's saying yes, that's an accurate characterization of this – this table. And then, you know, after that we have a handful of other questions.

But I'm wondering if there's an easier way to do this than just doing it on the phone here so that we can move on to the other kinds of – the other questions that we have. Did you -- Dr. (Johnson), did you write these paragraphs that are in the complaint or did you – and or did you – did you write them? That's the first question.

(Jill Johnston): No, I did not write them.

Mariane Engelman Lado: OK. Did you review them all before they, you know, came to EPA?

(Jill Johnston): I reviewed a version of them. I can't say whether it was the final version or not.

Mariane Engelman Lado: Yes, here's what I'm trying to do. Mary and I think you probably see what I'm trying to do here. I just want to make sure that – that Dr. (Johnson) because she didn't write it. But she does agree with what it says.

And that's all I'm trying to do to make sure that now when we use it, you know, when we – if we were going to, you know, use the languages in here that it's – that we can adopt it just trying to (inaudible) here. Let me propose this since Dr. (Johnson) – we didn't know that this was what you're going to do and Dr. (Wing) also reviewed these paragraphs.

And well, you know, we may have six type o's after he reviewed it. He definitely reviewed the final version. I – but perhaps since we didn't expect this line of questioning and Dr. (Johnson) has a copy of the complaint after the phone call either if you can identify which paragraphs you want her to review –

Female: Sure.

Mariane Engelman Lado: And so you can look at them and we can follow up. And if there are any points of divergents of course Dr. (Johnson) should say so on those paragraphs. But (inaudible) have time to review them and she can get back to us.

Female: Yes, I think that's more efficient.

Mariane Engelman Lado: OK. OK, is that OK with you Dr. (Johnson)?

(Jill Johnston): Yes, I can do that.

Mariane Engelman Lado: OK. Which paragraphs is it or do you want to e-mail us?

Female: We're going to e-mail it. Yes. And we'll have to e-mail you the list.

Mariane Engelman Lado: OK, the next question is I think we're already gone. It's hasn't been – the study has – now we're moving off the, you know, this sticky thing and moving into more general questions. So the study hasn't been published. And you're checking Mary on whether it was provided to DEQ.

Mary O'Loan: Yes.

Mariane Engelman Lado: OK. And I don't think we need to answer the next two. Do you know has this been made public in other way?

(Jill Johnston): I believe that on Earth Justice Website.

Mariane Engelman Lado: On the Earth Justice Website?

Female: Is that correct?

Mariane Engelman Lado: OK, then maybe I will after next question. Are you aware of any of response or criticisms or critiques of the study, you know, that are out there?

Female: I am not and Dr. (Ling) hasn't shared any with me if he has received something.

Mary O'Loan: Mariane have – have you?

Mariane Engelman Lado: I'm thinking. To be – to be as – as complete as I can but I'm racking my brain and I – I don't think I have received any critique or response for the disproportionality analysis.

Mary O'Loan: OK, all right. Well, you know, if you do come across anything, let us know. OK, now – now I just wanted to talk about the 2000 study. And mainly it's the differences between the 2000 study and the 2014 study. And, you know, sort of why those changes occurred if you know the answer.

So, one of the changes was –

Mariane Engelman Lado: I'm sorry before you go in to that, I like you to just hold up the –

Mary O'Loan: Yes.

Mariane Engelman Lado: -- our Website and it's look the disproportionality analysis is available through our Website.

Female: Not on the Website?

Mariane Engelman Lado: Not on our Website? Where?



Female: North Carolina Policy Watch.

Mariane Engelman Lado: North Carolina Policy Watch.

Mary O'Loan: OK. Complaint or the study?

Mariane Engelman Lado: The study.

Mary O'Loan: OK, good, OK.

Mariane Engelman Lado: But – OK, then if you heard that the 2014 analysis seems to be available on North Carolina Policy Watch. We – just also so, you know, this is a little bit of an (inaudible) from this interview but we have not generally made available the declarations to the press or to other people. We – we in general when we've got an inquiries we will call the declarant that might have information responsive to an inquiry.

And ask whether it's OK if we share their declaration even for people who did not ask to have their information anonymous. I mean it's anonymously and – and as, you know, there was – that – that there was that category as well. But we are, you know, -- we are respectful of people's courage and concerns about retaliation and so we've been very careful not to just throw everything up on the Website.

And it doesn't run to the disparities analysis but we haven't just put all the exhibits up on our Website or in any other place. So, that's – that's part of the backdrop as to why I'm not clear to where we sent what.

Mary O'Loan: OK. Did North Carolina Policy Watch just picked this up off of your Website? So, I'm wondering, so you said you haven't received any critiques. I guess I'm wondering or criticisms or, you know, any – anything not off the wall. Could it have gone in to –

Mariane Engelman Lado: North Carolina –

Mary O'Loan: North Carolina Policy Watch.

Elizabeth Haddix: It's a – this is Elizabeth.

Mary O'Loan: Yes.

Elizabeth Haddix: North Carolina Policy watch picked up the complaint from the centers Website and I'm not recalling any discussion that I had with them. But it would not surprise me at all because they're – they are investigative journalist that they would dig in to studies referenced in the complaint and share this with the public. So, in that – since the 2014 study, I mean it was not confidential, it's not surprising that they posted it on their Website.

Mary O'Loan: And Dr. (Ling) may have been talking to members of the public and providing copies since it wasn't confidential.

Mary O'Loan: OK.

Elizabeth Haddix: I'm pretty sure that they had also posted the 2000 report a long time – years ago.

Mary O'Loan: Right.

Elizabeth Haddix: So, it – it could be also that they've just been practicing Dr. (Wing's) work so.

Mary O'Loan: Do you have a relationship with them or they just pick your stuff up and – and they put it up there. Because what I'm wondering is whether they were on the receiving end of anything legitimate as far as the critiques.

Elizabeth Haddix: I do – we do have a relationship with them (inaudible) relationship with them so

Mary O'Loan: Yes, we, you know, we're interest – we are interested in it. I mean we're going to look to but we don't know what, you know, if they curate their site or

what happened. So, we would be interested if – if they happened to have anything.

Elizabeth Haddix: I'll find out.

Mary O'Loan: OK, sure, great. Thank you. OK so – so circling back Dr. (Johnson) to the – to the 2000 study and some of the changes in the methodology from that study to the 2014 study. One of the things that was discussed in the 2000 study had to do with well water. And looking at those that were – you know, somehow including those and now I can't remember because I'm – I'm looking for it now.

But that was taken in to account but that wasn't discussed in the 2014 study.

Female: So, my understanding in that report they looked at sort of three different vulnerable populations. One being racial and ethnic minorities, one, do you know looking at people living poverty. And a third looking at people who are relied on well water, but so – the – they all of three variables we're not included in one model because they were sort of three parallel analysis that looked at the correlation between those different categories stick to the population and proximity put to (inaudible).

Mary O'Loan: OK. And the well water components wasn't done in 2014, do you know – is there a lead in –

Female: Yes, I mean so specifically we kind of prioritize looking at racial and ethnic disparities in that analysis. And just – just a limited focused specifically on that issue. But also – so the 1990 census included information about people's drinking water resources. But the best of my knowledge that is the last census that included that data so if we wanted to look at data in, you know, in the 2020 start (inaudible) the 2010 census.

They did not include questions asking about drinking water.

Mary O'Loan: All right, great, thank you.

Mariane Engelman Lado: It's like this is Mariane if I could just interject, so because this is – this was not a general study for the general public but a study to test whether there was a racial disparity related to the general permit. The – the request was to examine that question whether there are disparities on the (inaudible) and ethnicity. So, you know, there's a difference between doing a study, you know, for the general inquiry of, you know, of vulnerable populations and – and their relationship to (inaudible) and looking in to the relationship on the basis of race and ethnicity and whether the civil rights law is violated.

So, it was really a question as to whether or not there was a disparity that cognizable under the civil rights law that, you know, that Dr. (Ling) and – and Dr. (Johnson) generously took up. So, that you know, -- that's a big part of it here.

Mary O'Loan: OK. Yes, I – I understand what you're saying Mariane. OK, the – so the next question it has to do with the distance and we talked about a little bit earlier. And I think that 2000 study did one and two mile buffers and now this one goes to three so can you – can you – and the next one has to do – the next question I have has to do with the measurement. The idea of moving off the buffer zones around the – since the black group area to using the center.

So, I mean maybe it's all related but if you could explain that.

Female: Yes, yes so a major difference between the – for the special approach that we took in these two different reports is in the 2000 reports they relied on black groups.

And so here there was a little over 4,000 black groups included I believe in the study area. And so, with our report we have over 200,000 blocks in our study area. So, the size of the blacks and the size of the black groups are very different especially in rural areas because they sort of and acrid to have, you know, similar types of populations in terms of counts in the – in these different census like geographic areas. And so rural areas the black groups tend to be very big and so – so they were looking at the – the principal

analysis in this 2000 report wanted to see if there was any (inaudible) in the black groups.

And that as sort of a sensitivity approach because, you know, you can have (inaudible) right in the corner of a black group and so that could impact it's neighboring black groups as well or a proportion of that population. So, as a sensitivity approach they also look at, sort of one mile around the black group and then two miles around the black group and included, you know, the category of whether or not it was near a (inaudible) or it's adjusted based on those parameters.

So, in contrast when you look at blocks, I don't remember the exact number but, you know, there's a little over 2,000 (inaudible) in the state so if we were just to assign exposure based on whether or not there was a (inaudible) in the block, you know, that went down to like fewer than a thousand blocks because they're just much smaller. And so for – for this analysis it – when – when you're using blocks as your unit of analysis then – then you need to consider I mean we believe it's important to consider a buffer zone around it because we know how chemicals can travel off site.

And so, you know, using evidence a lot of papers that have been published since 2000 we sort of relied on a – a three miles buffer for the 2014 report. But that is – I mean the – the special scale of the few are just – it was very different and so that's part of these and issue their difference in what kind of buffers, what considers.

(Jill Johnston): Let – let me ask what – and this is (Jill) so I'm – I'm understanding that you all looked the blocked group and you still considering I guess the travel, the air emissions of H<sub>2</sub>S, you all didn't overlay on this one as well to come up with that distance.

Female: On the 2000 report?

(Jill Johnston): Yes.

Female3: So, the choice of the one and two mile buffers I can now specifically speak to.

(Jill Johnston): OK.

Female: As our part – I believe the data presented here in the table don't specifically include the buffer zone but that was used as a sensitivity analysis. So, if we included these buffers or change their definition of exposure with the patterns that we changed and – and from my understanding of this report, you know, the patterns were – were consistent but I believe the tables show rely on the definition of that blocked group is exposed if there's a capo in that blocked group.

(Jill Johnston): I'm going to repeat that. So, you're saying the block group is exposed if there is a capo in that blocked group?

Female: Yes, that was the primary definition of the analysis from – from my understanding in this 2000 report.

Mary O'Loan: And the one and two mile buffer around the block group was not that populations were measured one and two miles outside of that blocked group? For some other reason.

Female: Yes, so it would take – so perhaps there would be no capo in a block group.

Mary O'Loan: OK.

Female: But if you do a one mile buffer around it there would be a capo. So, under that condition you would include that block group as this population is exposed to a capo. And – it doesn't specify I assume because it's block group that's using like around the – one mile around the buffer rather one mile from the centroid.

Mary O'Loan: Yes.

- Female: Because – you know, because block groups are so much bigger so – so you wouldn't get much outside the borders with that definition.
- Mary O'Loan: Dr. Johnston –
- Female: Yes.
- Mary O'Loan: And so just to – just to make sure I have it and it's clear when you say you would include that (inaudible) that's in the buffer off to two miles away in exposure that would be in the sensitivity analysis but not in – I don't know what you call it but the core analysis.
- Female: Yes, that's how, you know, I don't want to say 100 percent because I do not make these tables. But as I read this paper and how I understand the data presented is they're not using the – the buffered definition. They're – they're just using the category of whether or there's an (inaudible) inside the block group.
- Mary O'Loan: OK, OK, anybody else? All right so the next question and Mariane, I think this probably goes back to what you've already said but. Why was poverty omitted this time?
- Female: Yes, I think it goes back to the same point is that we were, you know, looking at – at criteria that were considered under the – the civil rights act.
- Mary O'Loan: OK.
- Female: And – and so, you know, poverty not being one of those classes considered we didn't included it in the analysis.
- Mary O'Loan: OK. Are there any other differences that you by chance know about between 2000 and the 2014?
- Female: I mean, you know, the – how we assigned which people were exposed. We're different also this analysis includes all commercial (inaudible) in the state of

North Carolina whereas the 2014 we restricted to those (inaudible) that are covered under the general permit. So, it does not include ones under the individual permits or under (inaudible).

Mary O'Loan: OK. Didn't you Dr. Johnston, explain what you mean by how the – how people are assigned. Are you referring to the use of quintiles and can you explain what the significance of that is.

(Jill Johnston): Yes, so actually now as (inaudible), you know, it was – you're considered to be exposed to a (inaudible) if you live in a block group with the (inaudible). You know, whereas in our – in our 2014 report, you're considered to be exposed to a (inaudible) if you're – the centroid of your block is within three miles of (inaudible).

Mary O'Loan: Right.

(Jill Johnston): But, yes, here also the – we – we take a similar approach to using your (inaudible) variables to account for non-linearity in the relationship between, you know, racial composition and proximity or exposure to (inaudible). But in this 2000 analysis they divide the group so that in each of the prior groups there's an equal number of block groups in it. So, that's how they defined their power point. So, for example like the – what was quintile is (inaudible) at 2.3 percent, the highest quintile more than 44 percent people of color.

Whereas in the updated (inaudible) we used partly just – because we thought it was a little bit more intuitive and easier to understand. We categorized the percent people of color in to equal – like equal percentages.

So, our reference group was the (inaudible) percent people of color because that was a high percentage of population where they live in blocks with no people of color and then divided it from, you know, more than (inaudible) with the 20 – 20 to 40 in this group of 20 percent. Because it's – it's a low risk I think easier to communicate rather than having to talk about, you know, that quintile versus that quintile and also because then we're able to look at, you know, these census blocks that are majority people of color.



Mary O'Loan: So, Dr. Johnston so that the – just a follow up on that. So, that if you used quintile it would have – would you – it would have been difficult to say anything meaningful about the effect of living in a – over 60 percent versus over 80 percent people of color community but using your methodology you could get more granular on that basis? Is that – is that right? I didn't hear the answer.

(Jill Johnston): I'm sorry. Yes, that is correct.

Mary O'Loan: OK. OK. Anybody else have any other questions, comments? OK. So, the 2000 study and – and, you know, maybe you – you may not be able to answer this but are you aware of any criticisms of that study. So, I think that – wasn't that submitted in one of the general permit processes? So, I'm wondering if they got more play in the outside world then if, you know, what reaction there may have been to that that you're aware of or critiques?

(Jill Johnston): I mean it was polished and as I know how pushed back is with this, you know, I had quality journal and environmental house codes went to the pair of new process. But I can't speak to any of critiques of it.

Mary O'Loan: OK. All right, where are we now? I think we're close to wrapping up here. we have a general – one – one last – one question here is the – is the generic one that's – that's all experts get asked and you probably seen it on TV which is the – you know, were you compensated for doing the study.

(Jill Johnston): No. No, I was not.

Mary O'Loan: OK. And the other question I have – I heard somebody laughing we're wondering if – if you had worked with Dr. (Ling) on any other studies related to swine and – and swine farms of North Carolina.

(Jill Johnston): Yes, I worked with him and also Dr. (Getri) around that analysis of hydrogen sulfide concentration near middle schools in Eastern North Carolina which was recently published.

Mary O'Loan: OK, that was – I think that is in your CV or was referenced on your CV, is that right?

(Jill Johnston): Yes, yes.

Mary O'Loan: And – and I was just going to interject here that that work and – and (Dr. Johnson's) experience working on studies generally community based participations studies and other work in the community on which she might base opinions about the adverse impact of – of swine (inaudible) could be subject to another interview as we kind of went back and forth on – that wasn't the premise of this interview but –

(Jill Johnston): Right.

Mariane Engelman Lado: But she's generously said that, you know, if – if she knows in advance that she'd be more than happy to talk to you about that body of work in the research associated with it.

Mary O'Loan: OK, that would be great. Did – did the hydrogen sulfide study get submitted with the materials you sent in April Mariane?

Mariane Engelman Lado: Yes, it is the study that is – it was confidential at the time but it is since been published. So, it – it's – it exhibit but it also says it's confidential.

Mary O'Loan: OK, so –

Mariane Engelman Lado: It was pre-publication at that point.

Mary O'Loan: We have a – the – I'm trying to find – do we can – can send up the publication copy just to make it easy?

Mariane Engelman Lado: Yes.

Mary O'Loan: For us the – the published version, that would be great. You have any other questions right now, do you have another one?

Female: I don't think so.

Mary O'Loan: Is there – is there anything else that – that you wanted to add Dr. Johnston?

(Jill Johnston): You don't – no, I don't believe so, I think if you have a chance to review or update the report then I'm happy to answer any questions or if there are any clarifications related to that but if – if I was a pretty parallel structure that you have we just refined the which (inaudible) we're in included in the analysis.

Mary O'Loan: OK , and so, yes, and I'm kind of thinking Mariane since I haven't had a chance to look at it that, you know, how we were going to send you the paragraph that we wanted to do. I have a feeling we're going to – we have to fix because we have to switch it now to the – to the newer study. So, there's a newer study – what you submitted Mariane, is it going to include – is it's just a new study or do you have a cover letter that it's like the complaint that goes through and, you know, here's the – here's the layman, you know, description of what is in – the support.

Mariane Engelman Lado: So, it's a little bit of a hybrid in the sense that we have the complaint and we're – we're filing additional submission in support of the allegations in the complaint. We don't amend the complaint and say this goes to paragraph 132, we rather are just submitting additional documentation in support of those allegations. So, there is a – a short cover letter but it's not – it's not lengthy and, you know, doesn't go in to which paragraph that it's supports.

Mary O'Loan: OK.

Mariane Engelman Lado: OK, the other thing I was thinking might be useful since we're ending up a little bit early which is good is just to say a little bit more about Dr. Johnston experienced, you know, and background and expertise on methodological issues and, you know, -- and of course it's (Todd) or -- or

research done or either you have her CV and I think Jeryl Covington asked some questions earlier on but if you have any questions out that are – or I would just open up to Dr. Johnston to say a few more words about whether you have taken any courses or have any special training or expertise on methodology in epidemiology and public health.

(Jill Johnston): Sure. I mean because the starting point is, you know, that's – that was not submitted to the (inaudible) process but there's a recent publication that – that are authored in the American Journal of Public health. That – so the uses are very similar approach to a racial disparities analysis. It's around a different topic looking at waste water disposal wells in – in South Texas so not related to industrial animal operations. But, you know, when did the peer review process used (inaudible) data and – and a very similar approach to that.

So, there is, you know, some of – some of that sort of expertise and – and credentials in the peer reviewed literature that – that is similar methods to what we're doing here in this paper. You know, but also, yes I mean I do have fairly expensive course work and the – these different types of – of progression modeling epidemiological study designed and also just quantitative data analysis process like both in, you know, in biostatistics and epidemiology and then also in the (inaudible) metrics.

And – and then, you know, I had a two year post doctoral fellowship and environmental epidemiology and – and co-taught class with Dr. (Ling) specifically on community based epidemiological methods and environmental justice.

Mariane Engelman Lado: OK, well thank you actually that was helpful particularly to the reference to the West Texas or the – the –

(Jill Johnston): Yes, so (inaudible) I mean I can send it to you but it's also included in my CV and, yes maybe helpful I – I think it's from critiques on – on the – from the oil industry but nothing that – that was really methodological driven but – but yes that can – it's – it's a reference in the peer review literature that's – that takes a

very similar approach to – to had it analyze data in a racial disparities analysis as (inaudible).

Mary O'Loan: OK, is it – is it easy for you to send us that report that because that – that –

(Jill Johnston): Yes.

Mary O'Loan: -- I think that would be helpful and then –

(Jill Johnston): Then maybe I could send it to Mariane and then – and in her package she can share with you.

Mariane Engelman Lado: Yes.

Mary O'Loan: Great. And the – the oil and gas industry comments or response or whatever you want to call it. How – like what form did that take?

(Jill Johnston): It came out to a reporter that shared it to me – with me.

Mary O'Loan: Can – would you be willing to share that as well?

(Jill Johnston): Yes, let me – let me review it but probably –

Mary O'Loan: OK. OK, did anybody else have any questions at this point? OK. So, we – we have some follow up, we have some things to give you, we'll wait for your list of paragraphs as well and exchange information and then it's sounds like on – on the – the follow up report that was submitted this year as well as the more recent study as well as other studies and work on the adverse impacts we should schedule another interview time.

And we can try to do that relatively quickly I think if – if you like so let's try to get that all under way.

Mariane Engelman Lado: Yes, I think we'll have to – to get back to you on that.

Brent Ducharme: Yes, yes Mariane what I – what I have identified so far is that you will be sending after you review the background, the statewide study so that we can correlate the tables and the statewide data that you have in the – in the report. We will follow up on whether that questions for the paragraphs are relevant. We need to review the data that you just sent to us on April 12, 2016 to see if those questions have been answered. So, we'll have to review that e-mail and I did receive those e-mail submission.

So, let us look at that and then we'll probably coordinate amongst ourselves on the follow up interview with Dr. Johnston and yourself.

Mariane Engelman Lado: Sure (inaudible) if you could send me some dates. I – I think what we said on the statewide data is if there are final charts again, I think it's just a reference problem and the complaint to this table to –

Brent Ducharme: Yes.

Mariane Engelman Lado: If there was another table too with the state wide data or another table with the state wide data or another column in an earlier draft that, you know, sufficiently well along, we'd be happy to send it to you.

Brent Ducharme: OK.

Mariane Engelman Lado: But we will – we'll look for that and get back to you on that.

Brent Ducharme: OK. And the – the follow up we did receive in the April 12 submission the (inaudible) report that is marked confidential and I think you're going to submit that after publication without the confidential reference to it.

Mariane Engelman Lado: Correct.

Brent Ducharme: And Dr. Johnston is going to do the supplementary information on the oil and gas disparity analysis literature to you and then you'll subsequently submit that to us.

Mary O'Loan: So, I think it would be the publication as well as she's going to review the feedback she got to see if it's appropriate to forward.

Mariane Engelman Lado: Right.

Brent Ducharme: Right. OK.

Mariane Engelman Lado: Terrific. OK, OK. Thank you.

Mary O'Loan: Yes, I think that's it for now.

(Jill Johnston): OK.

Mariane Engelman Lado: OK.

Mary O'Loan: All right thank you very much and thank you Dr. Johnston.

(Jill Johnston): All right thank you.

Mary O'Loan: OK, bye-bye.

Operator: The leader has disconnected, the conference will now end.

**END**

END

## **Hog and Pig Farming –**

A \$22.5 billion industry, up 25 percent since 2007<sup>1</sup>

North Carolina - \$2.9 Billion in sales

Top 2 Counties in Hog and Pig Sales are:<sup>2</sup>

Duplin County \$614 Million

Sampson 518.4 Million

## **Demographics**

### **Duplin County, NC<sup>3</sup>**

Population estimates, July 1, 2015, (V2015)	59,159
White alone, not Hispanic or Latino, percent, July 1, 2015, (V2015)	51.8%
Black or African American alone, percent, July 1, 2015, (V2015) (a)	25.9%
American Indian and Alaska Native alone, percent, July 1, 2015, (V2015) (a)	1.4%
Hispanic or Latino, percent, July 1, 2015, (V2015) (b)	21.7%

### **Sampson County, NC**

Population estimates, July 1, 2015, (V2015)	63,724
White alone, not Hispanic or Latino, percent, July 1, 2015, (V2015)	51.9%
Black or African American alone, percent, July 1, 2015, (V2015) (a)	27.0%
American Indian and Alaska Native alone, percent, July 1, 2015, (V2015) (a)	3.1%
Hispanic or Latino, percent, July 1, 2015, (V2015) (b)	18.8%

### **North Carolina<sup>4</sup>**

Population estimates, July 1, 2015, (V2015)	10,042,802
White alone, not Hispanic or Latino, percent, July 1, 2015, (V2015)	63.8%
Black or African American alone, percent, July 1, 2015, (V2015) (a)	22.1%
American Indian and Alaska Native alone, percent, July 1, 2015, (V2015) (a)	1.6%
Hispanic or Latino, percent, July 1, 2015, (V2015) (b)	9.1%

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<sup>1</sup> [https://www.agcensus.usda.gov/Publications/2012/Online\\_Resources/Highlights/Hog\\_and\\_Pig\\_Farming/](https://www.agcensus.usda.gov/Publications/2012/Online_Resources/Highlights/Hog_and_Pig_Farming/)

<sup>2</sup> [https://www.agcensus.usda.gov/Publications/2012/Online\\_Resources/Highlights/Hog\\_and\\_Pig\\_Farming/#top\\_counties](https://www.agcensus.usda.gov/Publications/2012/Online_Resources/Highlights/Hog_and_Pig_Farming/#top_counties)

<sup>3</sup> <http://www.census.gov/quickfacts/table/PST045215/37061,37141>

<sup>4</sup> <http://www.census.gov/quickfacts/table/PST045215/37,37163,37061,37141>





## Air Studies Related to Swine CAFOs (\* indicates apparent NC focus)

### Studies submitted as Exhibits

\*Marion Deerhake et al., *Atmospheric Dispersion and Deposition of Ammonia Gas*, in RTI Int'l, *Benefits of Adopting Environmentally Superior Swine Waste Management Technologies in North Carolina: An Environmental and Economic Assessment*, at 2-32 to 2-34 (2003), available at [http://www.cals.ncsu.edu/waste\\_mgt/smithfield\\_projects/phase1report04/appendix%20c-RTI.pdf](http://www.cals.ncsu.edu/waste_mgt/smithfield_projects/phase1report04/appendix%20c-RTI.pdf), attached as **Exhibit 47** (modeling rates of ammonia deposition by county). “The greatest deposition occurs in Sampson and Duplin counties.” *Id.* at 2-33.

\*Maria C. Mirabelli et al., *Asthma Symptoms Among Adolescents Who Attend Public Schools That Are Located Near Confined Swine Feeding Operations*, 118 *Pediatrics* e66 (2006), attached as **Exhibit 42** (finding students aged 12 to 14 who attended North Carolina public schools within 3 miles of industrial swine facilities reported increased asthma-related symptoms, more doctor-diagnosed asthma, and more asthma-related medical visits compared to peers at other schools).

\*Maria C. Mirabelli et al., *Race, Poverty, and Potential Exposure of Middle-School Students to Air Emissions from Confined Swine Feeding Operations*, 114 *Env'tl. Health Perspectives* 591, 595 (2006), attached as **Exhibit 43** (finding that North Carolina's swine facilities are located closer to schools enrolling higher percentages of non-white and economically disadvantaged students).

\*Leah Schinasi et al., *Air Pollution, Lung Function, and Physical Symptoms in Communities Near Concentrated Swine Feeding Operations*, 22 *Epidemiology* 208, 208 (2011), attached as **Exhibit 48** (measuring pollutants levels and effect on 101 adults living near hog CAFOs in 16 eastern North Carolina communities).

\*Sacoby M. Wilson & Marc L. Serre, *Examination of Atmospheric Ammonia Levels Near Hog CAFOs, Homes, and Schools in Eastern North Carolina*, 41 *Atmospheric Env't* 4977, 4985 (2007), attached as **Exhibit 49**.

\*Steve Wing et al., *Air Pollution and Odor in Communities Near Industrial Swine Operations*, 116 *Env'tl. Health Perspectives* 1362 (2008), attached as **Exhibit 50** (study participants living within 1.5 miles of swine factory farm reported altering or ceasing normal daily activities when hydrogen sulfide concentrations, and associated hog odor, were the highest) [Wing, *Air Pollution and Odor*].

\*Steve Wing et al., *Air Pollution from Industrial Swine Operations and Blood Pressure of Neighboring Residents*, 121 *Env'tl. Health Perspectives* 92 (2013), attached as **Exhibit 51**.

\*Steve Wing & Jill Johnston, Dep't of Epidemiology, Univ. of N.C. at Chapel Hill, *Industrial Hog Operations in North Carolina Disproportionately Impact People of Color* (2014) attached as **Exhibit 4**.

**Cited in Complaint, but copy not provided.**

Julia R. Barrett, *Airborne Bacteria in CAFOs: Transfer of Resistance from Animals to Humans*, 113 *Envtl. Health Perspectives* A116 (2005) (reviewing literature on cross-species transfer of antibiotic-resistant bacteria).

Amy Chapin et al., *Airborne Multidrug-Resistant Bacteria Isolated from a Concentrated Swine Feeding Operation*, 113 *Envtl. Health Perspectives* 137 (2005) (finding multidrug-resistant *Enterococcus*, coagulase-negative staphylococci, and viridans group streptococci in the air of an industrial swine operation at levels dangerous to human health).

Jennifer K. Costanza et al., *Potential Geographic Distribution of Atmospheric Nitrogen Deposition from Intensive Livestock Production in North Carolina, USA*, 398 *Sci. Total Env't* 76, 77 (2008).

Shawn G. Gibbs et al., *Isolation of Antibiotic-Resistant Bacteria from the Air Plume Downwind of a Swine Confined or Concentrated Animal Feeding Operation*, 114 *Envtl. Health Perspectives* 1032 (2006).

Shawn G. Gibbs et al., *Airborne Antibiotic Resistant and Nonresistant Bacteria and Fungi Recovered from Two Swine Herd Confined Animal Feeding Operations*, 1 *J. Occupational & Env'tl. Hygiene* 699 (2004) (finding multidrug-resistant bacteria inside and downwind of industrial swine operations at levels previously determined to pose a human health hazard).

Rachel Avery Horton et al., *Malodor as a Trigger of Stress and Negative Mood in Neighbors of Industrial Hog Operations*, 99 *Am. J. Pub. Health Suppl.*, S610 (2009).

James A. Merchant et al., *Asthma and Farm Exposures in a Cohort of Rural Iowa Children*, 113 *Envtl. Health Perspectives* 350 (2005) (finding children living on swine farms, including large facilities with more than 500 head, experienced increased rates of asthma compared to non-exposed children; results more pronounced where swine facilities added antibiotics to feed).

Katja Radon et al., *Environmental Exposure to Confined Animal Feeding Operations and Respiratory Health of Neighboring Residents*, 18 *Epidemiology* 300 (2007) (surveying nearly 7,000 residents of four German towns with high confined livestock operation densities and concluding that such operations “may contribute to the burden of respiratory disease among their neighbors”). (Footnoted in Earthjustice comments on draft permit).

C.A. Rotz, *Management to Reduce Nitrogen Losses in Animal Production*, 82 *J. Animal Sci.* E119, E129 (2004).

Ana M. Rule et al., *Assessment of an Aerosol Treatment To Improve Air Quality in a Swine Concentrated Animal Feeding Operation*, 39 *Envtl. Sci. & Tech.*, 9649, 9649 (2005).

Matias B. Vanotti & Patrick G. Hunt, Ammonia Removal from Swine Wastewater Using Immobilized Nitrifiers, *in* Proceedings of the 8th Int'l. Conf. of the FAO ESCORENA Network on Recycling of Agricultural, Municipal and Industrial Residues in Agriculture, Rennes, France 427, 428 (1998), *available at* <http://www.ramiran.net/doc98/FIN-ORAL/VANOTTI.pdf>.

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\*John T. Walker et al., *Atmospheric Transport and Wet Deposition of Ammonium in North Carolina*, 34 *Atmospheric Env't* 3,407 (2000).

\*Susan S. Schiffman et al., *Quantification of Odors and Odorants from Swine Operations in North Carolina*, 108 *Agric. & Forest Meteorology* 213 (2001).

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Donham K. 1993. *Respiratory Disease Hazards to Workers in Livestock and Poultry*

*Confinement Structures*. Seminars in Respiratory Medicine 14:49-59.

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### **Other studies I came across**

\*Yelena Ogneva-Himmelberger \*, Liyao Huang and Hao Xin, *CALPUFF and CAFOs: Air Pollution Modeling and Environmental Justice Analysis in the North Carolina Hog Industry*, ISPRS Int. J. Geo-Inf. 2015, 4, 150-171; doi:10.3390/ijgi4010150 (Published: 26 January 2015)

**Abstract:** Concentrated animal feeding operations (CAFOs) produce large amounts of animal waste, which potentially pollutes air, soil and water and affects human health if not appropriately managed. This study uses meteorological and CAFO data and applies an air pollution dispersion model (CALPUFF) to estimate ammonia concentrations at locations downwind of hog CAFOs and to evaluate the disproportionate exposure of children, elderly, whites and minorities to the pollutant. Ammonia is one of the gases emitted by swine CAFOs and could affect human health. Local indicator of spatial autocorrelation (LISA) analysis uses census block demographic data to identify hot spots where both ammonia concentrations and the number of exposed vulnerable population are high. We limit our analysis to one watershed in North Carolina and compare environmental justice issues between 2000 and 2010. Our results show that the average ammonia concentrations in hot spots for 2000 and 2010 were 2.5–3-times higher than the average concentration in the entire watershed. The number of people living in the areas where ammonia concentrations exceeded the minimal risk level was 3647 people in 2000 and 3360 people in 2010. We recommend using air pollution dispersion models in future environmental justice studies to assess the impacts of the CAFOs and to address concerns regarding the health and quality of life of vulnerable populations.

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**Abstract:** Air sampling was completed on the front lawn of 35 homes neighboring swine farms in three different regions in the Upper Midwest of the United States. One region was dominated by large scale, swine confined animal feeding operations (CAFO's) noted as swine confinement area (SCA). The second area was dominated by smaller scale operations utilizing hoop structure facilities (HA). The third area was basically devoid of livestock, dominated by row-crop production, and served as the control area (CA). The time weighted average concentrations of hydrogen sulfide (8.42 ppb) was higher ( $p = 0.047$ ) in SCA area than the control (3.48 ppb). However, carbon dioxide (449.6 ppm), ammonia (12.78 ppb) and PM10 (42.25 microg/m<sup>3</sup>) were higher in the hoop structure area than the other areas. Swine population density, distance between the homes and swine facilities, and wind direction had an interactive effect on the average levels of ammonia ( $p = 0.04$ ). The contaminant levels at the homes were relatively low compared to typical concentrations inside animal buildings. However, exceedences of federal recommended limits for hydrogen sulfide in outdoor air were observed in the swine CAFO area. Concentration of hydrogen sulfide exceeded the recommended limits of the ATSDR (30 ppb) for chronic exposure at two of the 12 homes in the CAFO area (17%). Average hydrogen sulfide concentration exceeded the EPA recommended community standards (0.7 ppb) in all three areas assessed (SCA, HA, and CA). As chronic exposure to hydrogen sulfide may be present in areas of production agriculture, a potential health risk may be present. Further studies to provide additional information regarding exposures to hydrogen sulfide in rural environments are warranted.

Thorne PS, Ansley AC, Perry SS. *Concentrations of bioaerosols, odors, and hydrogen sulfide inside and downwind from two types of swine livestock operations.* *J Occup Environ Hyg*. 2009 Apr;6(4):211-20. doi: 10.1080/15459620902729184 <http://www.ncbi.nlm.nih.gov/pubmed/19177273>

**Abstract:** Few data on in-barn and downwind concentrations of endotoxin, bioaerosols, and odors from livestock facilities are available, and no studies have compared conventional confinement operations with the more animal-friendly hoop operations. Hoops are open to the environment and use a composted bedding system rather than housing pigs on slatted floors over pits holding manure slurry as in conventional confinements. We assessed airborne toxicants upwind, in barns, and downwind and evaluated determinants of exposure. Inhalable particulate matter, endotoxin, odor threshold, hydrogen sulfide, culturable mesophilic bacteria, culturable fungi, and total airborne microbes, along with wind speed, temperature, and humidity were measured at separate mid-sized livestock facilities (one hoop, one confinement) in Central Iowa on 10 occasions over 2 years. Significant differences in contaminants were observed between hoops and confinement buildings and across seasons for endotoxin, odors, airborne microorganisms, and hydrogen sulfide. For hoops and confinements, respectively, geometric mean in-barn concentrations were 3250 and 3100 EU/m<sup>3</sup> for endotoxin; 1400 and 1910

microg/m(3) for particulates; 19.6 and 146 ppb for hydrogen sulfide; 137 and 428 dilutions for odor threshold; and  $3.0 \times 10(6)$  and  $1.5 \times 10(6)$  organisms/m(3) for total microbes. Endotoxin, odor, and culturable microorganisms exceeded recommended exposure limits. Reduced analysis of variance models for these contaminants demonstrated differences by barn type, season, number of pigs, and, in some cases, temperature and humidity. Both types of swine operations produced high airborne concentrations of endotoxin, odor, hydrogen sulfide, bacteria, and fungi. Endotoxin and odors were found downwind at concentrations previously associated with adverse health effects.

## Others

### **Studies submitted as Exhibits**

Dana Cole et al., *Concentrated Swine Feeding Operations and Public Health: A Review of Occupational and Community Health Effects*, 108 *Envtl. Health Perspectives* 685 (2000), available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1638284/pdf/envhper00309-0041.pdf>, attached as **Exhibit 39**.

Carrie Hribar, Nat'l Ass'n of Local Bds. of Health, *Understanding Concentrated Animal Feeding Operations and Their Impact on Communities*, *Environmental Health* 4 (2010), available at [http://www.cdc.gov/nceh/ehs/docs/understanding\\_cafos\\_nalboh.pdf](http://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf), attached as **Exhibit 40**.

Pew Commission on Industrial Farm Animal Production, *Environmental Impact of Industrial Farm Animal Production 1-2* (2008), available at [http://www.ncifap.org/\\_images/212-4\\_EnvImpact\\_tc\\_Final.pdf](http://www.ncifap.org/_images/212-4_EnvImpact_tc_Final.pdf), attached as **Exhibit 45** [hereinafter, Pew, *Environmental Impact*] (same).

Pew Commission on Industrial Farm Animal Production, *Putting Meat on the Table: Industrial Farm Animal Production in America* (2008), available at [http://www.ncifap.org/\\_images/PCIFAPSmry.pdf](http://www.ncifap.org/_images/PCIFAPSmry.pdf), attached as **Exhibit 46** [hereinafter, Pew, *Putting Meat on the Table*] (describing the rise of industrial animal production in America and the effects on public health and the environment).

### **Cited in Complaint, but copy not provided.**

Joan A. Casey, *High-Density Livestock Operations, Crop Field Application of Manure, and Risk of Community-Associated Methicillin-Resistant Staphylococcus aureus Infection in Pennsylvania*, 173 *J. Am. Med. Ass'n: Internal Med.* 1980 (2013).

Ctrs. for Disease Control, U.S. Dep't of Health and Human Servs., *Antibiotic Resistance Threats in the United States*, 2013, at 6 (2013), available at <http://www.cdc.gov/drugresistance/threat-report-2013/pdf/ar-threats-2013-508.pdf>.

Oliver Denis et al., *Methicillin-Resistant Staphylococcus aureus ST398 in Swine Farm Personnel, Belgium*, 15 *Emerging Infectious Diseases* 1098 (2009) (Belgium).

\*B. Edwards B & AE Ladd, *Race, Poverty, Political Capacity and the Spatial Distribution of Swine Waste in North Carolina, 1982–1997*, 9 *North Carolina Geogr* 55–77 (2001).

Michael Greger & Gowri Koneswaran, *The Public Health Impacts of Concentrated Animal Feeding Operations on Local Communities*, 33 *Farm Cmty. Health* 11, 13 (2010).



Joseph Herriges et al., *Living with Hogs in Iowa: The Impact of Livestock Facilities on Rural Residential Property Values*, 81 Land Econ. 530 (2005).

Xander W. Huijsdens et al., *Community-Acquired MRSA and Pig-Farming*, 5 Annals Clinical Microbiol. & Antimicrobials 26 (2006) (Netherlands).

T. Khanna et al., *Methicillin Resistant Staphylococcus aureus Colonization in Pigs and Pig Farmers*, 128 J. Veterinary Microbiol. 298 (2008) (Canada).

Jungik Kim & Peter Goldsmith, *A Spatial Hedonic Approach to Assess the Impact of Swine Production on Residential Property Values*, 42 Env'tl & Res. Econ. 509 (2009) (estimating decline in Craven County home property values on per hog basis).

Katherine Milla et al., *Evaluating the Effect of Proximity to Hog Farms on Residential Property Values: A GIS-Based Hedonic Model Approach*, 17 URISA J. 27 (2005) (finding that values of Craven County, North Carolina homes decreased with increasing local hog populations and decreasing distances from homes to factory farms).

\*Jessica L. Rinsky et al., *Livestock-Associated Methicillin and Multidrug Resistant Staphylococcus aureus Is Present Among Industrial, Not Antibiotic-Free Livestock Operation Workers in North Carolina*, 8 PLoS One e67641 (2013).

Jochen Schulz et al., *Longitudinal Study of the Contamination of Air and of Soil Surfaces in the Vicinity of Pig Barns by Livestock-Associated Methicillin-Resistant Staphylococcus aureus*, 78 Applied Env'tl. Microbiol. 5666 (2012) (detecting MRSA 300 feet from a barn in which animals, air, and workers' plastic boots tested positive for MRSA).

Doug Gurian-Sherman, Union of Concerned Scientists, CAFOs Uncovered: The Untold Costs of Confined Animal Feeding Operations (2008), available at [http://www.ucsusa.org/assets/documents/food\\_and\\_agriculture/cafos-uncovered.pdf](http://www.ucsusa.org/assets/documents/food_and_agriculture/cafos-uncovered.pdf) (discussing the substantial cost of confined animal feeding operations and discussing alternatives).

EK Silbergeld & LB Price LB, *Industrial Food Animal Production, Antimicrobial Resistance, and Human Health*, 29 Ann. Rev. of Pub. Health 151 (2008).

Tara C. Smith et al., *Methicillin-Resistant Staphylococcus aureus (MRSA) Strain ST398 Is Present in Midwestern U.S. Swine and Swine Workers*, 4 PLoS One e4258 (2009).

Tara C. Smith et al., *Methicillin-Resistant Staphylococcus aureus in Pigs and Farm Workers on Conventional and Antibiotic-Free Swine Farms in the USA*, 8 PLoS One e63704 (2013).

Stacy Sneeringer, *Does Animal Feeding Operation Pollution Hurt Public Health? A National Longitudinal Study of Health Externalities Identified by Geographic Shifts in Livestock Production*, 91 Am. J. Agric. Econ. 124, 130 (2009).

\*Paul B. Stretesky et al., *Environmental Inequity: An Analysis of Large-Scale Hog Operations in 17 States, 1982-1997*, 68 Rural Soc. 231 (2003) (finding that between 1982 and 1997 large-scale hog operations in North Carolina were more likely to be sited in areas with a disproportionate number of black residents).

K.M. Thu, *Public Health Concerns for Neighbors of Large-Scale Swine Production Operations*, 8 J. Agric. Safety & Health 175 (2002) (synthesizing research regarding public health concerns for neighbors of industrial swine facilities, including respiratory issues associated with air pollution).

Ingrid V.F. Van den Broek et al., *Methicillin-Resistant Staphylococcus aureus in People Living and Working in Pig Farms*, 137 J. Epidem. & Infection 700 (2009) (Netherlands).

Wing S. 2002. *Social Responsibility and Research Ethics in Community-Driven Studies of Industrialized Hog Production*. *Environ. Health Perspect.* 110:437–444.

**Studies not listed above but cited in Exhibit 4** (Steve Wing & Jill Johnston, Dep’t of Epidemiology, Univ. of N.C. at Chapel Hill, *Industrial Hog Operations in North Carolina Disproportionately Impact People of Color* (2014)).

\*Bullers S. 2005. *Environmental Stressors, Perceived Control, and Health: The Case of Residents Near Large-Scale Hog Farms in Eastern North Carolina*. *Human Ecology* 33:1-16.

Casey JA, Curriero FC, Cosgrove SE, Nachman KE, Schwartz BS. 2013. *High-Density Livestock Operations, Crop Field Application of Manure, and Risk of Community-Associated Methicillin-Resistant Staphylococcus Aureus Infection in Pennsylvania*. *JAMA Internal Medicine* 173:1980-1990.

Cole D, Drum DJ, Stalknecht DE, White DG, Lee MD, Ayers S, et al. 2005. *Free-living Canada Geese and Antimicrobial Resistance*. *Emerging Infectious Diseases* 11:935-938.

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Furuseth O. 1997. *Restructuring of Hog Farming in North Carolina: Explosion and Implosion*. *Professional Geographer* 49:391-403.

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Thu K. 2001. *Agriculture, the Environment, and Sources of State Ideology and Power*. *Culture and Agriculture* 23:1-7.

Thu K. 2003. *Industrial Agriculture, Democracy, and the Future*. In: *Beyond Factory Farming: Corporate Hog Barns and the Threat to Public Health, the Environment, and Rural Communities*, (Ervin A, Holtslander C, Qualman D, Sawa R, eds). Saskatoon, Saskatchewan: Canadian Centre for Policy Alternatives.

van de Giessen AW, van Santen-Verheuveld MG, Hengeveld PD, Bosch T, Broens EM, Reusken CB. 2009. *Occurrence of Methicillin-Resistant Staphylococcus Aureus in Rats Living on Pig Farms*. *Preventive Veterinary Medicine* 91:270-273.

## Studies Related to Swine CAFOs

### AIR – all studies (\* indicates NC focus)

#### Studies submitted as Exhibits

\*Marion Deerhake et al., *Atmospheric Dispersion and Deposition of Ammonia Gas*, in RTI Int'l, *Benefits of Adopting Environmentally Superior Swine Waste Management Technologies in North Carolina: An Environmental and Economic Assessment*, at 2-32 to 2-34 (2003), available at [http://www.cals.ncsu.edu/waste\\_mgt/smithfield\\_projects/phase1report04/appendix%20c-RTI.pdf](http://www.cals.ncsu.edu/waste_mgt/smithfield_projects/phase1report04/appendix%20c-RTI.pdf), attached as **Exhibit 47** (modeling rates of ammonia deposition by county). “The greatest deposition occurs in Sampson and Duplin counties.” *Id.* at 2-33.

\*Maria C. Mirabelli et al., *Asthma Symptoms Among Adolescents Who Attend Public Schools That Are Located Near Confined Swine Feeding Operations*, 118 *Pediatrics* e66 (2006), attached as **Exhibit 42** (finding students aged 12 to 14 who attended North Carolina public schools within 3 miles of industrial swine facilities reported increased asthma-related symptoms, more doctor-diagnosed asthma, and more asthma-related medical visits compared to peers at other schools).

\*Maria C. Mirabelli et al., *Race, Poverty, and Potential Exposure of Middle-School Students to Air Emissions from Confined Swine Feeding Operations*, 114 *Env'tl. Health Perspectives* 591, 595 (2006), attached as **Exhibit 43** (finding that North Carolina's swine facilities are located closer to schools enrolling higher percentages of non-white and economically disadvantaged students).

\*Leah Schinasi et al., *Air Pollution, Lung Function, and Physical Symptoms in Communities Near Concentrated Swine Feeding Operations*, 22 *Epidemiology* 208, 208 (2011), attached as **Exhibit 48** (measuring pollutants levels and effect on 101 adults living near hog CAFOs in 16 eastern North Carolina communities).

\*Sacoby M. Wilson & Marc L. Serre, *Examination of Atmospheric Ammonia Levels Near Hog CAFOs, Homes, and Schools in Eastern North Carolina*, 41 *Atmospheric Env't* 4977, 4985 (2007), attached as **Exhibit 49**.

Steve Wing et al., *Air Pollution and Odor in Communities Near Industrial Swine Operations*, 116 *Env'tl. Health Perspectives* 1362 (2008), attached as **Exhibit 50** (study participants living within 1.5 miles of swine factory farm reported altering or ceasing normal daily activities when hydrogen sulfide concentrations, and associated hog odor, were the highest) [Wing, *Air Pollution and Odor*].

Steve Wing et al., *Air Pollution from Industrial Swine Operations and Blood Pressure of Neighboring Residents*, 121 *Env'tl. Health Perspectives* 92 (2013), attached as **Exhibit 51**.

**Cited in Complaint, but copy not provided.**

Julia R. Barrett, *Airborne Bacteria in CAFOs: Transfer of Resistance from Animals to Humans*, 113 *Envtl. Health Perspectives* A116 (2005) (reviewing literature on cross-species transfer of antibiotic-resistant bacteria).

Amy Chapin et al., *Airborne Multidrug-Resistant Bacteria Isolated from a Concentrated Swine Feeding Operation*, 113 *Envtl. Health Perspectives* 137 (2005) (finding multidrug-resistant *Enterococcus*, coagulase-negative staphylococci, and viridans group streptococci in the air of an industrial swine operation at levels dangerous to human health).

Jennifer K. Costanza et al., *Potential Geographic Distribution of Atmospheric Nitrogen Deposition from Intensive Livestock Production in North Carolina, USA*, 398 *Sci. Total Env't* 76, 77 (2008).

Shawn G. Gibbs et al., *Isolation of Antibiotic-Resistant Bacteria from the Air Plume Downwind of a Swine Confined or Concentrated Animal Feeding Operation*, 114 *Envtl. Health Perspectives* 1032 (2006).

Shawn G. Gibbs et al., *Airborne Antibiotic Resistant and Nonresistant Bacteria and Fungi Recovered from Two Swine Herd Confined Animal Feeding Operations*, 1 *J. Occupational & Env'tl. Hygiene* 699 (2004) (finding multidrug-resistant bacteria inside and downwind of industrial swine operations at levels previously determined to pose a human health hazard).

Rachel Avery Horton et al., *Malodor as a Trigger of Stress and Negative Mood in Neighbors of Industrial Hog Operations*, 99 *Am. J. Pub. Health Suppl.*, S610 (2009).

James A. Merchant et al., *Asthma and Farm Exposures in a Cohort of Rural Iowa Children*, 113 *Envtl. Health Perspectives* 350 (2005) (finding children living on swine farms, including large facilities with more than 500 head, experienced increased rates of asthma compared to non-exposed children; results more pronounced where swine facilities added antibiotics to feed).

Katja Radon et al., *Environmental Exposure to Confined Animal Feeding Operations and Respiratory Health of Neighboring Residents*, 18 *Epidemiology* 300 (2007) (surveying nearly 7,000 residents of four German towns with high confined livestock operation densities and concluding that such operations “may contribute to the burden of respiratory disease among their neighbors”). (Footnoted in Earthjustice comments on draft permit).

C.A. Rotz, *Management to Reduce Nitrogen Losses in Animal Production*, 82 *J. Animal Sci.* E119, E129 (2004).

Ana M. Rule et al., *Assessment of an Aerosol Treatment To Improve Air Quality in a Swine Concentrated Animal Feeding Operation*, 39 *Envtl. Sci. & Tech.*, 9649, 9649 (2005).

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Donham K, Reynolds S, Whitten P, Merchant J, Burmeister L, Popendorf W. 1995. *Respiratory Dysfunction in Swine Production Facility Workers: Dose-response Relationships of Environmental Exposures and Pulmonary Function*. American Journal of Industrial Medicine 27:405-418.

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Donham KJ1, Lee JA, Thu K, Reynolds SJ., *Assessment of air quality at neighbor residences in the vicinity of swine production facilities.*, *J Agromedicine*. 2006;11(3-4):15-24. doi: 10.1300/J096v11n03\_03. <http://www.ncbi.nlm.nih.gov/pubmed/19274894>

**Abstract:** Air sampling was completed on the front lawn of 35 homes neighboring swine farms in three different regions in the Upper Midwest of the United States. One region was dominated by large scale, swine confined animal feeding operations (CAFO's) noted as swine confinement area (SCA). The second area was dominated by smaller scale operations utilizing hoop structure facilities (HA). The third area was basically devoid of livestock, dominated by row-crop production, and served as the control area (CA). The time weighted average concentrations of hydrogen sulfide (8.42 ppb) was higher ( $p = 0.047$ ) in SCA area than the control (3.48 ppb). However, carbon dioxide (449.6 ppm), ammonia (12.78 ppb) and PM10 (42.25 microg/m<sup>3</sup>) were higher in the hoop structure area than the other areas. Swine population density, distance between the homes and swine facilities, and wind direction had an interactive effect on the average levels of ammonia ( $p = 0.04$ ). The contaminant levels at the homes were relatively low compared to typical concentrations inside animal buildings. However, exceedences of federal recommended limits for hydrogen sulfide in outdoor air were observed in the swine CAFO area. Concentration of hydrogen sulfide exceeded the recommended limits of the ATSDR (30 ppb) for chronic exposure at two of the 12 homes in the CAFO area (17%). Average hydrogen sulfide concentration exceeded the EPA recommended community standards (0.7 ppb) in all three areas assessed (SCA, HA, and CA). As chronic exposure to hydrogen sulfide may be present in areas of production agriculture, a potential health risk may be present. Further studies to provide additional information regarding exposures to hydrogen sulfide in rural environments are warranted.

Thorne PS, Ansley AC, Perry SS. *Concentrations of bioaerosols, odors, and hydrogen sulfide inside and downwind from two types of swine livestock operations.* *J Occup Environ Hyg*. 2009 Apr;6(4):211-20. doi: 10.1080/15459620902729184 <http://www.ncbi.nlm.nih.gov/pubmed/19177273>

**Abstract:** Few data on in-barn and downwind concentrations of endotoxin, bioaerosols, and odors from livestock facilities are available, and no studies have compared conventional confinement operations with the more animal-friendly hoop operations. Hoops are open to the environment and use a composted bedding system rather than housing pigs on slatted floors over pits holding manure slurry as in conventional confinements. We assessed airborne toxicants upwind, in barns, and downwind and evaluated determinants of exposure. Inhalable particulate matter, endotoxin, odor threshold, hydrogen sulfide, culturable mesophilic bacteria, culturable fungi, and total airborne microbes, along with wind speed, temperature, and humidity were measured at separate mid-sized livestock facilities (one hoop, one confinement) in Central Iowa on 10 occasions over 2 years. Significant differences in contaminants were observed between hoops and confinement buildings and across seasons for endotoxin, odors, airborne microorganisms, and hydrogen sulfide. For hoops and confinements, respectively, geometric



mean in-barn concentrations were 3250 and 3100 EU/m(3) for endotoxin; 1400 and 1910 microg/m(3) for particulates; 19.6 and 146 ppb for hydrogen sulfide; 137 and 428 dilutions for odor threshold; and  $3.0 \times 10(6)$  and  $1.5 \times 10(6)$  organisms/m(3) for total microbes. Endotoxin, odor, and culturable microorganisms exceeded recommended exposure limits. Reduced analysis of variance models for these contaminants demonstrated differences by barn type, season, number of pigs, and, in some cases, temperature and humidity. Both types of swine operations produced high airborne concentrations of endotoxin, odor, hydrogen sulfide, bacteria, and fungi. Endotoxin and odors were found downwind at concentrations previously associated with adverse health effects.

## **WATER – Limited to NC studies**

### **Studies submitted as Exhibits**

M.E. Anderson & M.D. Sobsey, *Detection and Occurrence of Antimicrobially Resistant E. coli in Groundwater on or near Swine Farms in Eastern North Carolina*, 54 Water Sci. & Tech. 211, 217 (2006), attached as **Exhibit 37** (“Overall, the results of this study demonstrated that antibiotic-resistant E. coli were present in groundwaters associated with commercial swine farms that have anaerobic lagoons and land application systems for swine waste management.”).

Wendee Nicole, *CAFOs and Environmental Justice: The Case of North Carolina*, 121 Env'tl. Health Perspectives A182, A186 (2013), attached as **Exhibit 44** (“Even without spills, ammonia and nitrates may seep into groundwater, especially in the coastal plain where the water table is near the surface.”).

Steve Wing et al., *Environmental Injustice in North Carolina's Hog Industry*, 108 Env'tl. Health Perspectives 225, 228 (2000), attached as **Exhibit 52** [Wing, *Environmental Injustice*]. (finding that North Carolina's intensive hog confinement operations are located disproportionately in communities with higher levels of poverty, higher proportions of non-white persons, and higher dependence on wells for household water supply).

### **Cited in Complaint, but copy not provided.**

JoAnn M. Burkholder & Howard B. Glasgow, *History of Toxic Pfiesteria in North Carolina Estuaries from 1991 to the Present*, 51 Biosci. 827, 833 (2001) (“During acute [Pfiesteria] exposure, fish commonly hemorrhage or develop skin lesions that are diffuse or nonfocal, as well as deep, localized or focal, bleeding sores or ulcerations.”).

Michael A. Mallin et al., *Factors Contributing to Hypoxia in Rivers, Lakes, and Streams*, 51 Limnology & Oceanography 690, 699-700 (2006).

Steve Wing, et al., *The Potential Impact of Flooding on Confined Animal Feeding Operations in Eastern North Carolina*, 110 Env'tl. Health Perspectives 387, 387 (2002), available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1240801/pdf/ehp0110-000387.pdf> (describing how the 15-20 inches of rain dropped by Hurricane Floyd turned eastern North Carolina into a fecal flood zone). The flooding following Hurricane Floyd was not an isolated incident. *Id.* (“In 1996, 22 fecal waste pits were reported to have been ruptured or inundated following flooding from Hurricane Fran, and one major spill was reported following Hurricane Bonnie in 1998.”).

### **Studies not listed above Earthjustice cited in their 2013 comments on draft Swine Permit**

(none)

**See also:**

OW's July 2013 *"Literature Review of Contaminants in Livestock and Poultry Manure and Implications for Water Quality"* [http://www.agcensus.usda.gov/publications/2007/full\\_report/usvi.pdf](http://www.agcensus.usda.gov/publications/2007/full_report/usvi.pdf).

Bill Schrock's zip file Appendix G (convert from WPD first) for swine references regarding pre-2002 studies on CAFOs and air issues.

N/A

**Studies submitted as Exhibits**

JoAnn M. Burkholder et al., *Impacts of Waste from CAFOs on Water Quality*, 115 *Envtl. Health Perspectives* 308, 309 (2007), available at <http://dx.doi.org/10.1289/ehp.8839>, attached as **Exhibit 3 to Burkholder Decl.**

Dana Cole et al., *Concentrated Swine Feeding Operations and Public Health: A Review of Occupational and Community Health Effects*, 108 *Envtl. Health Perspectives* 685 (2000), available at <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1638284/pdf/envhper00309-0041.pdf>, attached as **Exhibit 39.**

Carrie Hribar, Nat'l Ass'n of Local Bds. of Health, *Understanding Concentrated Animal Feeding Operations and Their Impact on Communities*, *Environmental Health* 4 (2010), available at [http://www.cdc.gov/nceh/ehs/docs/understanding\\_cafos\\_nalboh.pdf](http://www.cdc.gov/nceh/ehs/docs/understanding_cafos_nalboh.pdf), attached as **Exhibit 40.**

Pew Commission on Industrial Farm Animal Production, *Environmental Impact of Industrial Farm Animal Production 1-2* (2008), available at [http://www.ncifap.org/\\_images/212-4\\_EnvImpact\\_tc\\_Final.pdf](http://www.ncifap.org/_images/212-4_EnvImpact_tc_Final.pdf), attached as **Exhibit 45** [hereinafter, Pew, Environmental Impact] (same).

Pew Commission on Industrial Farm Animal Production, *Putting Meat on the Table: Industrial Farm Animal Production in America* (2008), available at [http://www.ncifap.org/\\_images/PCIFAPSmry.pdf](http://www.ncifap.org/_images/PCIFAPSmry.pdf), attached as **Exhibit 46** [hereinafter, Pew, Putting Meat on the Table] (describing the rise of industrial animal production in America and the effects on public health and the environment).

Steve Wing & Jill Johnston, Dep't of Epidemiology, Univ. of N.C. at Chapel Hill, *Industrial Hog Operations in North Carolina Disproportionately Impact People of Color* (2014) attached as **Exhibit 4.**

**Cited in Complaint, but copy not provided.**

Joan A. Casey, *High-Density Livestock Operations, Crop Field Application of Manure, and Risk of Community-Associated Methicillin-Resistant Staphylococcus aureus Infection in Pennsylvania*, 173 *J. Am. Med. Ass'n: Internal Med.* 1980 (2013).

Ctrs. for Disease Control, U.S. Dep't of Health and Human Servs., *Antibiotic Resistance Threats in the United States*, 2013, at 6 (2013), available at <http://www.cdc.gov/drugresistance/threat-report-2013/pdf/ar-threats-2013-508.pdf>.

- Oliver Denis et al., *Methicillin-Resistant Staphylococcus aureus ST398 in Swine Farm Personnel, Belgium*, 15 Emerging Infectious Diseases 1098 (2009) (Belgium).
- B. Edwards B & AE Ladd, *Race, Poverty, Political Capacity and the Spatial Distribution of Swine Waste in North Carolina, 1982–1997*, 9 North Carolina Geogr 55–77 (2001).
- Michael Greger & Gowri Koneswaran, *The Public Health Impacts of Concentrated Animal Feeding Operations on Local Communities*, 33 Farm Cmty. Health 11, 13 (2010).
- Joseph Herriges et al., *Living with Hogs in Iowa: The Impact of Livestock Facilities on Rural Residential Property Values*, 81 Land Econ. 530 (2005).
- Carol J. Hodne, Iowa Policy Project, Concentrating on Clean Water: The Challenge of Concentrated Animal Feeding Operations 8 (2005), available at <http://www.iowapolicyproject.org/2005docs/050406-cafo-fullx.pdf>. 2005docs/050406-cafo-fullx.pdf (identifying “seepage from earthen manure storage structures” as typical pathway for nitrates entering groundwater).
- Xander W. Huijsdens et al., *Community-Acquired MRSA and Pig-Farming*, 5 Annals Clinical Microbiol. & Antimicrobials 26 (2006) (Netherlands).
- T. Khanna et al., *Methicillin Resistant Staphylococcus aureus Colonization in Pigs and Pig Farmers*, 128 J. Veterinary Microbiol. 298 (2008) (Canada).
- Jungik Kim & Peter Goldsmith, *A Spatial Hedonic Approach to Assess the Impact of Swine Production on Residential Property Values*, 42 Env'tl & Res. Econ. 509 (2009) (estimating decline in Craven County home property values on per hog basis).
- Michael A. Mallin et al., Ctr. for Marine Science Research, Univ. of N.C. at Wilmington, Effect of Organic and Inorganic Nutrient Loading on Photosynthetic and Heterotrophic Plankton Communities in Blackwater Rivers (1998), available at <http://repository.lib.ncsu.edu/dr/bitstream/1840.4/1880/1/NC-WRRI-315.pdf>;
- Katherine Milla et al., *Evaluating the Effect of Proximity to Hog Farms on Residential Property Values: A GIS-Based Hedonic Model Approach*, 17 URISA J. 27 (2005) (finding that values of Craven County, North Carolina homes decreased with increasing local hog populations and decreasing distances from homes to factory farms).
- Jessica L. Rinsky et al., *Livestock-Associated Methicillin and Multidrug Resistant Staphylococcus aureus Is Present Among Industrial, Not Antibiotic-Free Livestock Operation Workers in North Carolina*, 8 PLoS One e67641 (2013).
- Jochen Schulz et al., *Longitudinal Study of the Contamination of Air and of Soil Surfaces in the Vicinity of Pig Barns by Livestock-Associated Methicillin-Resistant Staphylococcus aureus*, 78

Applied Environ. Microbiol. 5666 (2012) (detecting MRSA 300 feet from a barn in which animals, air, and workers' plastic boots tested positive for MRSA).

Doug Gurian-Sherman, Union of Concerned Scientists, CAFOs Uncovered: The Untold Costs of Confined Animal Feeding Operations (2008), *available at* [http://www.ucsusa.org/assets/documents/food\\_and\\_agriculture/cafos-uncovered.pdf](http://www.ucsusa.org/assets/documents/food_and_agriculture/cafos-uncovered.pdf) (discussing the substantial cost of confined animal feeding operations and discussing alternatives).

EK Silbergeld & LB Price LB, *Industrial Food Animal Production, Antimicrobial Resistance, and Human Health*, 29 Ann. Rev. of Pub. Health 151 (2008).

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Stacy Sneeringer, *Does Animal Feeding Operation Pollution Hurt Public Health? A National Longitudinal Study of Health Externalities Identified by Geographic Shifts in Livestock Production*, 91 Am. J. Agric. Econ. 124, 130 (2009).

Paul B. Stretesky et al., *Environmental Inequity: An Analysis of Large-Scale Hog Operations in 17 States, 1982-1997*, 68 Rural Soc. 231 (2003) (finding that between 1982 and 1997 large-scale hog operations in North Carolina were more likely to be sited in areas with a disproportionate number of black residents).

K.M. Thu, *Public Health Concerns for Neighbors of Large-Scale Swine Production Operations*, 8 J. Agric. Safety & Health 175 (2002) (synthesizing research regarding public health concerns for neighbors of industrial swine facilities, including respiratory issues associated with air pollution).

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Bridgett M. West et al., *Antibiotic Resistance, Gene Transfer, and Water Quality Patterns Observed in Waterways Near CAFO Farms and Wastewater Treatment Facilities*, 217 Water Air Soil Pollution 473 (2011).

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J.M. Ham, *Seepage losses from animal waste lagoons: A summary of a four year investigation in Kansas*, 45 Am. Soc’y of Agric. Eng’rs 983 (2002) (summarizing study performed using earlier variation of water balance method).

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Graham JP, Price LB, Evans SL, Graczyk TK, Silbergeld EK. 2009. *Antibiotic Resistant Enterococci and Staphylococci Isolated from Flies Collected near Confined Poultry Feeding Operations*. Sci Total Environ 407:2701-10.

Rinsky JL, Nadimpalli M, Wing S, Hall D, Baron D, Price LB, et al. 2013. *Livestock-Associated Methicillin and Multidrug Resistant Staphylococcus Aureus Is Present Among Industrial, Not Antibiotic-Free Livestock Operation Workers in North Carolina*. PloS One 8:e67641.

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